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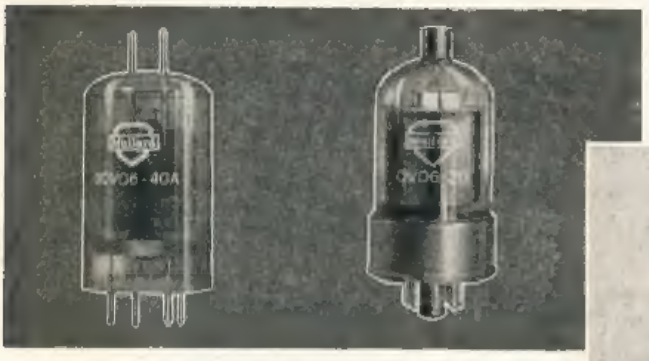

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"AMATEUR RADIO"

is the official journal of the Wireless Institute of Australia and was first issued on 1st October, 1933, by authority of the Council of the Victorian Division, the present publishers.

The Wireless Institute of Australia was founded in 1910 to promote interest in Amateur Radio. Today each State has its own Division who is responsible for intrastate matters. Each elects a member to Federal Council who delegates to Federal Executive the task of implimenting their decisions on Interstate matters. The Federal Executive is nominated by Victorian Division and these nominations are ratified by all Divisions.

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Editorial

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AMATEUR RADIO IS OUR HERITAGE

Words which might well be termed the Magna Carta of the Amateur Transmitter were once spoken in the House of Commons, words which set a precedent for which Amateurs throughout the Empire should be eternally grateful.

They were spoken in the year 1904 by the late Lord Derby, who as Postmaster-General during his second reading speech, brought about the first Wireless Telegraphy Bill. His words are worth recording for posterity because without his positive and futuristic outlook, Amateur Radio might never have been.

He spoke these words:

"The class with whom I have the greatest sympathy," he said, **"are those who wish to go in for experiments in the science of wireless, and I have been able to frame a clause which will give absolute freedom in that direction, merely requiring registration on the part of those who wish to engage in experiments. In a matter of this description the House will doubtless desire that the Act should be administered as liberally as possible, and I shall certainly do my best in that direction. For what it is worth, I will give an undertaking that no request for a license for experiments be refused unless the refusal has been approved by me personally."**

This delightfully simple state of affairs did not, of course, prevail, which in these modern times is quite understandable. But it was this legislation which gave to the then technically minded people the opportunity to conduct the early experiments from which Amateur Radio was born; and from then on it was the Amateurs who lead the way in proving that world-wide communication was not only possible but offered to the commercial world an unbelievable medium for communication.

For those generations which followed, "wireless" was an accepted part of living in the same way that the generation born today will accept television and other marvels of the current scientific age. And yet if we look backwards and realise the advancement in only fifty years of wireless and its allied fields, we can most certainly say that we have only touched on the possibilities of the future. Lord Derby envisaged the possibilities when he liberalised the first Wireless Telegraphy Bill so that technically interested people could experiment unhindered by regulations. Regulations were, of course, ultimately necessary, and as far as Amateurs are concerned experimenting is confined to the bands above 30 Mc. Nevertheless, Amateurs have proved their worth in the bands below 30 Mc. in a manner not thought about in 1904, and with more liberalised thinking on the part of those who administer the current Wireless Telegraphy Act, the Amateurs can go on being of service to Australia in many fields other than experimenting as it was known in the era at the turn of the century.

We have a heritage which, because of our relatively limited number, becomes clouded by the overwhelming contributions to our science by instrumentalities with unlimited financial resources. Our heritage is something for which we can be justly proud; a heritage worth fighting for. Let us all remember that we have it in our own hands to contribute something in the overall picture, and we should never let anyone forget it.

FEDERAL EXECUTIVE.

ANNUAL EDITION "A.R." OCTOBER 1960

THE CONTENTS

THE TUNNEL

R. L. WATTERS

THE tunnel diode reported in 1958 by Japanese scientist Dr. Leo Esaki, is an entirely new semiconductor device. It is like a diode because it has two terminals and like a transistor since it may be used to amplify power.

Although related to the transistor, the tunnel diode operates upon a different principle and offers advantages not found in transistors. Some of these are its very small size, extreme speed and stability under varying temperature conditions.

It is a new circuit element which may, with appropriate circuitry, function as a switch, amplifier and oscillator. Amplification and oscillation are possible well into microwave frequencies. At lower frequencies tunnel diode circuits may be simpler, smaller or more efficient than those of vacuum tubes or transistors. Let's see what this tunnel diode is and how it can be used in different circuit applications.

This new device gets its name from a mechanism called "quantum-mechanical tunneling" (until now of only theoretical interest) which describes the manner in which electrical charges move through the device. The combination of this "tunnel effect" and the fact that the device comprises a p-n junction between two regions of very heavily doped semiconductor material has led to the name tunnel diode.

NEGATIVE RESISTANCE

The property of the tunnel diode produced by the tunnel effect is the negative resistance which appears over a portion of its voltage range. A negative resistance may be defined as a circuit element in which current decreases with increase in voltage (or vice versa). This negative-resistance property is illustrated in Fig. 1, which shows the current-voltage characteristic of a typical germanium tunnel diode at room temperature. The negative-resistance region of the curve lies between points A and B.

The slope of this curve at any point is the resistance of the tunnel diode at that point. A vertical region (infinite increase in current), for example, would indicate zero resistance while a horizontal region (no increase in current) would indicate an infinitely large resistance. In addition, a region which slopes upward to the right indicates a positive resistance while a region which slopes upward to the left indicates a negative resistance. An examination of the curve of Fig. 1 shows that the region from zero to A represents a positive resistance, the region from A to B represents the negative resistance and the region beyond B again represents a positive resistance. The current-voltage characteristic of the tunnel diode, therefore, has a region of negative resistance between two regions of positive resistance.

While the tunnel diode is related to the transistor, the semiconductive material used is much more heavily doped with impurity than that used for transistors. It is almost metallic, and no hermetic seal is necessary for protection from such things as surface contamination and moisture penetration.

A p-n junction formed between a heavily doped body of p-type conductivity and a heavily doped body of n-type conductivity semiconductive material is very narrow, about one-millionth of an inch or less. It is this combination, with the proper forward bias, that allows a "tunnel" current to flow and produces the negative resistance. All we need to know about this tunnel current is that **its transit time is so short that it does not affect the maximum operating frequency of the diode.** This frequency limit is set by the junction capacitance and negative resistance of the device and the bulk resistance of the material from which it is made. A diode was recently made to oscillate at 10,000 Mc. However, for known materials, the calculated maximum frequency of oscillation is 20,000 to 30,000 Mc.

Now, how do we use the tunnel diode in a circuit? The current-voltage characteristic described above and shown in Fig. 1 is the key. Since the slope at any point of this curve is the resistance of the diode, this property of the diode may be conveniently determined from it. For example, the resistance at point D in Fig. 1 is $\frac{0.115}{-0.00011} = -1045$ ohms.

Notice again that between A and B the diode is a negative resistance, that is, the current decreases with increase in voltage. At points A and B, however, the resistance is very high. We can see this on the curve itself. In the vicinity of A and B there is little or no change in current with changes in voltage.

The location of points A and B of the curve are set mainly by the semiconductive material from which the tunnel diode is made. For germanium, the voltage at A is typically about 0.05 volt and at B 0.3. For silicon, on the other hand, the voltages are 0.07 and 0.4, respectively. Other materials have somewhat different values. However, all are in the forward voltage range of less than 1 volt.

PROPERTIES

To understand how to use the tunnel diode in various circuit arrangements, it will be useful to first explore some of its electrical properties. It will be convenient, therefore, to refer to the simple series circuit arrangement of Fig. 3. Then, in conjunction with Fig. 2, we will analyse the operation of the tunnel diode.

A current-voltage characteristic of a typical tunnel diode is shown in Fig. 2. The current through it is shown with respect to the voltage E_o across its terminals. Since the circuit of Fig. 3 is a simple series arrangement, the voltage E_o at any time is equal to the battery voltage E minus the voltage drop in the resistance R. It would be very useful, therefore, also to know the current flowing in resistance R with respect to the voltage drop in it. Load line F in Fig. 2 shows just this relation and a very useful tool is available from it. The intersection of line F with the voltage axis shows the battery supply voltage E while its intersection with the diode characteristic curve shows the voltage E_o.

Load line F may be used to represent the resistance R in the circuit of Fig. 3. While the slope of this line is negative and it appears at first that there is a decrease in current with increase in voltage, it must be remembered that the load line F does not show the current flowing in the resistance with respect to the voltage supplied, as is the case for the diode characteristic. Rather, it shows the current flowing with respect to the **voltage drop** in the resistance. For this reason, this negative slope is not to be confused with the negative-resistance region (A-B) of the diode characteristic.

The slope of load line F is determined by resistance R so that, having drawn

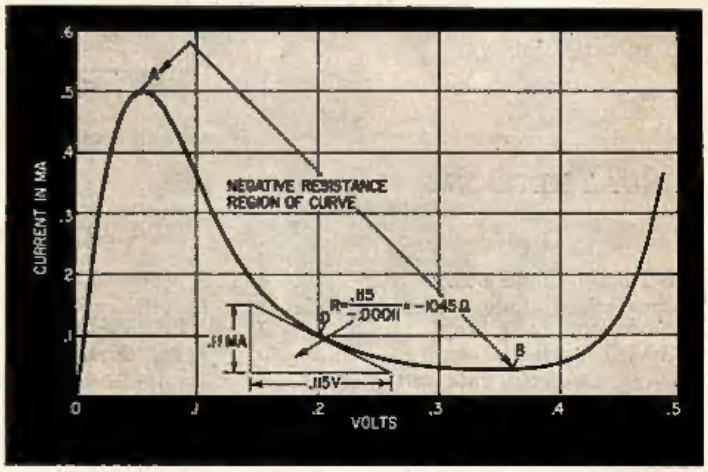


Fig. 1—Typical germanium tunnel-diode characteristic.

DIODE STORY*

and J. V. CLAEYS

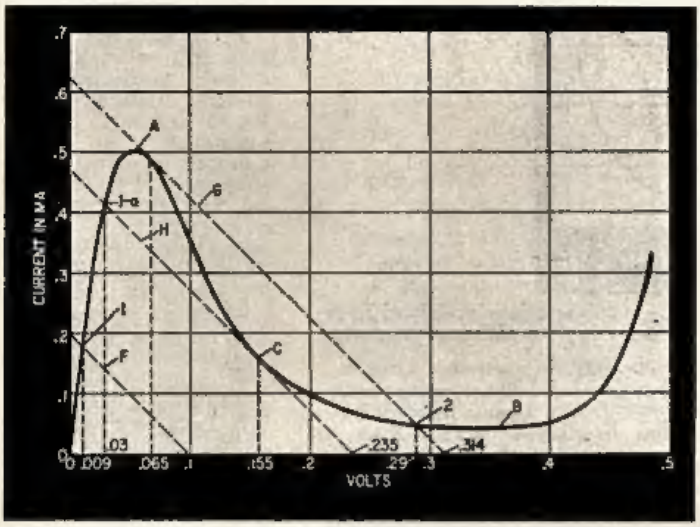


Fig. 2—Tunnel-diode characteristic with load lines for 500-ohm resistor in circuit of Fig. 3.

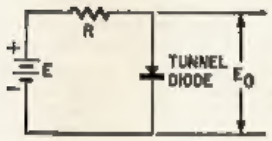
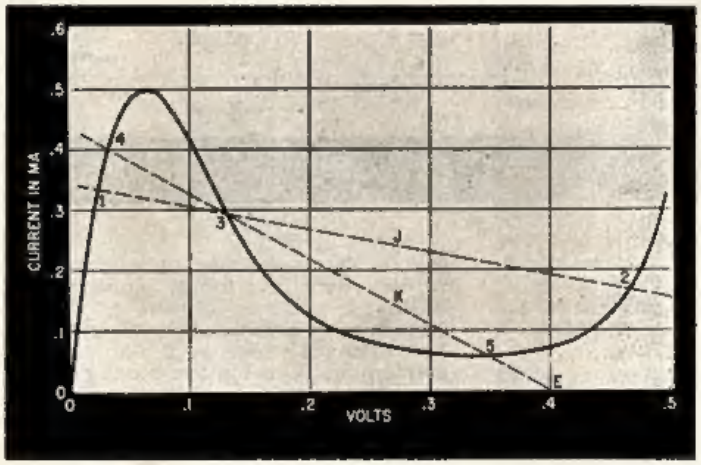


Fig. 3—Basic tunnel-diode circuit.

Fig. 4 — Tunnel-diode characteristic and load lines of switching property.



a particular load line on the diode characteristic, one can easily find the resistance (R) necessary to establish it. For example, to find the R necessary to get load line F in Fig. 1, the slope is found from the voltage and current values taken from the curve. Line F's slope is equal to $\frac{0.1}{-0.0002} = -500$.

The value of resistance R is +500 ohms since, as stated above, the negative slope does not concern us here.

For the condition shown, E = 0.1 volt, E_o = 0.009 volt and the current is 0.18 mA. Therefore, with the above values, the point of operation of the diode (for the circuit of Fig. 3), will be as shown at 1 in Fig. 2. Although the slope of this load line is fixed by the resistance R in the circuit of Fig. 3, a change in the battery supply voltage will change its location with respect to the current-voltage characteristic.

Now, let us increase the battery supply voltage. As this is done the load line moves up along the branch 0-A. When the intersection (or E_o) reaches a point near A, as shown by the load line G, the intersection (E_o) jumps almost instantly to the point 2 between B and C. Point 2 represents the new value of voltage E_o.

If now we decrease the battery supply voltage E, the load line and its intersection will move toward the point C. Here it switches suddenly to the point 1-a on load line H and the lower value of voltage E_o. Notice that the slope of the load line remains the same, since resistor R was fixed at 500 ohms and only the position of the line along the voltage axis changes with change in battery supply voltage.

Load lines G and H show the battery supply voltages as 0.314 and 0.235 at the respective switching points. This shows that, as the battery voltage E was increased from zero, E_o increased to 0.065 volt and then very suddenly switched to 0.29 volt. This is an increase in voltage across the diode (E_o) of 0.225 volt. Reducing the battery voltage to 0.235 volt then caused E_o to switch suddenly from a value of 0.155 to 0.03 volt. This is a decrease in voltage across the diode terminals of 0.125 volt. Thus, we see that near the switching points A and C a very small change in the battery voltage produced a relatively large voltage change across the diode. This property of the tunnel diode indicates one area of its usefulness.

SWITCHING

Load line J in Fig. 4 (using the circuit of Fig. 3) represents a value of resistance much higher than the negative resistance of the diode. Notice that this load line intersects the characteristic in both positive resistance regions. Thus there are **two** stable operating points for a single battery voltage E. The voltage across the diode can be either that corresponding to point 1 or that corresponding to point 2.

To show that only points 1 and 2 are stable, look at Fig. 4 and load line J. Now imagine for a moment that the current and voltage have values corresponding to point 3. If, for any reason whatsoever (motion of electrons, heat or anything else), there is a very small increase in the current, then by looking at the characteristic curve we can see that there must be a decrease in the voltage across the diode.

A look at the circuit shows us that, if this happens, there is more voltage available to send current through the resistance which causes a further decrease in the voltage across the diode. This action continues until point 1 is reached. At point 1, however, if there is to be any further increase in the current, there must also be an increase in the voltage across the diode since this is a positive resistance region. The only way the voltage across the diode can increase, of course, is for the voltage drop in resistance R to decrease. And this is possible only if the current becomes smaller. The operating point then must remain at 1 and be stable there.

The same thing would happen with any small decrease in current from that at point 3 so that the point would be then stable only at 2. This shows us that it is possible to provide a circuit arrangement which can be quickly changed from one impedance condition to another. For example, when the

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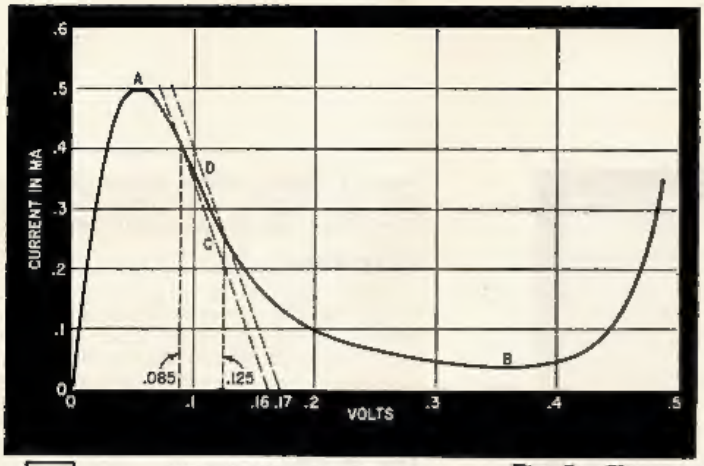


Fig. 5—Characteristic and load lines illustrating amplifying property.

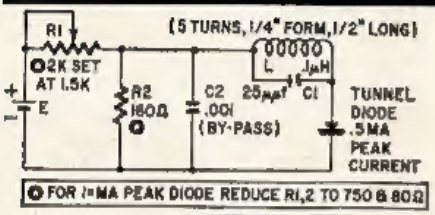


Fig. 6—Tunnel-diode oscillator circuit. Values given are for 100-mc operation. Unit may be frequency-modulated by 2,000-ohm headphone across R2.

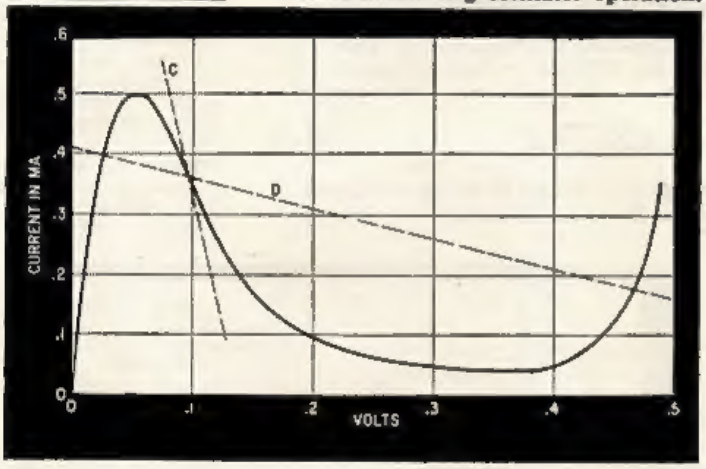


Fig. 7 — Characteristics and load lines illustrating oscillator operation.

diode operates at point 1, it is in its low-impedance state and a relatively large current may flow. When operating at point 2, it is in a higher-impedance state and the current is limited to a relatively low value.

Selecting a load line such as K in Fig. 4 with its corresponding battery voltage E will indicate how this change may be made more significant. For example, the current at point 4 on load line K for a germanium diode of about 0.5 mA. peak current is 0.3 mA. and the slope indicates an impedance of about 150 ohms. However, the current at point 5 is 0.055 mA. and the slope indicates a very high impedance. Thus, the diode can be employed to switch impedances, currents or voltages if desired.

To use the tunnel diode as an amplifier or an oscillator, we must prevent it from switching. When we look at the diode characteristic curve we realise that, for this to be done, the value of resistor R must be less than the negative resistance of the diode. That is, the load line established by resistance R must have a steeper (more vertical) slope than the slope of the negative-resistance region between A-B (Fig. 1).

Such a load line is shown as C in Fig. 5. It always has only one intersection with the diode characteristic, making it possible to have an average bias in the negative-resistance region. The slope of region A-B for a typical germanium tunnel diode having a peak current at point A of about 1 mA. is about —100. Hence its negative resistance will be 100 ohms.

If now we choose a tunnel diode with a junction area 10 times as large (so that the peak current is 10 mA.), we find that the slope of the region A-B is steeper and the negative resistance is reduced to only 10 ohms. From this we can see that, as the diode's peak current increases, resistance R must decrease to prevent switching.

AMPLIFICATION

Now how can the tunnel diode amplify? Refer to Fig. 3 again and assume that the diode is biased somewhere between the points A and B and has a load line such as shown at C on the characteristic of Fig. 5 so that it looks like a negative resistance. This negative resistance is indicated as $(-R_o)$. Then:

$$(1)\quad e_o = \frac{e\,(-R_o)}{R + (-R_o)},$$

$$\text{or gain} = \frac{e_o}{e} = \frac{(-R_o)}{R + (-R_o)}$$

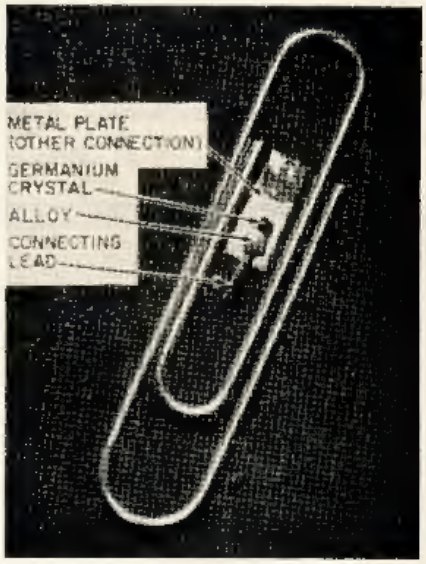
where e is a small a.c. voltage in series with the battery and e_o is the a.c. voltage across the tunnel diode.

From equation (1) we see that the gain is 1 when R = 0 and increases to a very large value as R approaches $(-R_o)$. This is shown graphically in Fig. 5. Lines C and D correspond to a resistance R of 150 ohms and battery voltages of 0.16 and 0.17 volts, or a change of 0.01 volt. At the same time we see that the voltage across the tunnel diode is 0.085 and 0.125 volt, respectively, or a change of 0.04 volt. Therefore, the gain = 0.04 ÷ 0.01 = 4. We also see that, as the slopes of the lines C and D approach that of region A-B of the diode characteristic, the gain increases.

Now let us consider the circuit of Fig. 6. This arrangement can function as an amplifier or an oscillator, depending on the resonant impedance of the L-C circuit. Assume first that R_1 is adjusted so that the diode has a negative resistance, $-R_o$, and that R_2 is smaller than R_o so that we will prevent switching. If the resonant impedance of the L-C circuit is made greater than R_o, then the circuit will oscillate. If, on the other hand, the resonant impedance is less than R_o, the circuit will amplify. Fig. 7 shows the diode characteristic with the d.c. load line C established by resistances R_1 and R_2 and the a.c. load line D due to the resonant impedance of the L-C circuit in order for the circuit to function as an oscillator.

An important thing in regard to this is that the amplitude of the oscillation will build up until the average negative resistance of the diode just equals the positive resistance of the circuit at the operating frequency. For our purposes,

(Continued on Page 14)



An f.m. transmitter built around a tunnel diode. The microphone is in the upper right corner and the battery is covered by it. The tunnel diode is to the left of the mike.

Transistorised Converter for Mobile Work —the easy way

S. E. MOLEN,* VK2SG

IT would appear from general observation that more and more people are going mobile each day, and with the roads and cars getting better, the trips are getting longer, which means more and more fun for the mobiliers, which is as it should be. Various types of whips, transmitters and receivers are being constructed and used with varying degree of success.

Whips and transmitters are a field that books have been written about, and still everyone has their own ideas. Which leaves us with only the receiver to worry about, with some of the commercial car radios turning to hybrid and transistor, it is felt that we must follow this trend.

Let us firstly consider hybrid types of converters. The first thing we need is filament voltage and current. The best we appear to be able to do is 6.3v. at 300 mA., which has to come from the car battery and has to be filtered to get rid of ignition and other noises.

★ Adapt your car radio for Amateur reception by using this Converter. Even the XYL will not object to this one.

So it is good, now let's consider a car b.c. receiver. Most of them are 1 to 1½ microvolt sensitive, signal-to-noise ratio is excellent, selectivity is, in most cases, 35 to 40 db. down 4 Kc. off the signal and the stability is excellent. So what's all this got to do with transistors? Well mainly this; using the car b.c. set as the second i.f., you have a very good potential for a communication receiver. All you need ahead of it is a good, stable, sensitive converter that is simple to build, without any outside power connections and no complications.

The converter about to be described was started at 1330 hours one rainy

L5—B/c. band r.f. coil.
L6—30 turns No. 33 enam., close wound on cold end of L5.
NE-2—Neon from Command Receiver aerial terminal. (See text.)

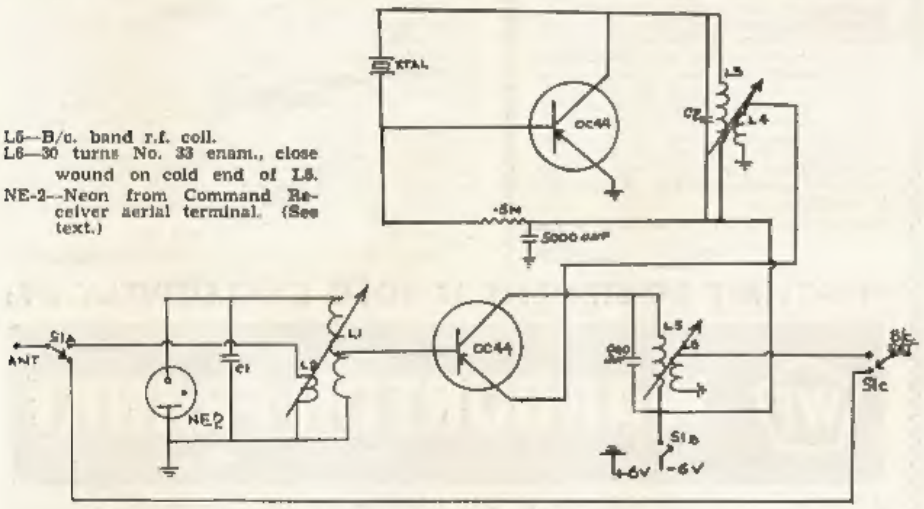


Fig. 1.—Circuit of Transistorised Converter.

As you see, it is starting to get difficult before we even get around to coils or h.t.

Alright, let's forget the hybrid types and pick up another train of thought—transistors. Now before you throw the book in the corner and sneer, "Transistors, they're no good, too noisy, no gain, too hard to use, etc., etc.," let's look at your communication receiver. Is it one microvolt sensitive? What is the signal-to-noise ratio, better than 15 db.? Selectivity better than 40 db. down 4 Kc. off the signal? And lastly, what is the stability?

* 17 Margaret Street, Strathfield, N.S.W.

afternoon and, having wound the coils and wired the converter completely, it was in the car and working by 1700 hours that same rainy afternoon, which proves it must be simple.

Let's see how simple it is. What does it consist of? One crystal, one resistor, two transistors, three coils and four condensers, plus a switch and various nuts, bolts and a few bits of wire, batteries and that's it. Beat that, you value happy chappies.

CARE OF TRANSISTORS

Before getting on with the converter itself, let's think a little about the troubles one has while building transistor gear, and this will hold good for all transistors. Well I guess the best way to consider the troubles is to point out what not to do with or near transistors.

One of the safest ways to work with transistors in new gear that you are building is to use sockets (there are sockets available for transistors, in Sydney Philips have them). They are a three-pin plug-in type and can be chassis mounted. Using these sockets, one can remove the transistor before each soldering job. One point with these sockets, the transistor can be plugged in either way, so mark the chassis for the correct polarity of the transistor.

When soldering transistorised gear, keep heat away from the transistors, they come unstuck very easy when they get hot. So keep the bit of the iron small and keep the heat radiation down. Use 12-gauge copper wire as the bit.

Do not use an iron with a.c. on the bit, such as Scope, etc. The a.c. can get into the transistors and they don't like a.c. voltage.

When checking the circuitry, do not use an ohm-meter while the transistors are in ciruit as it is very easy to apply reverse voltage with an ohm-meter.

Before connecting the batteries, check the polarity of the battery, reverse voltage will kill the transistors. Positive goes to earth.

Connect a milliamp. meter in series with the battery lead and keep your eye on it while making adjustments. Too much current can cause a runaway transistor and that's another one gone!

Don't try to increase the sensitivity by increasing the voltage beyond the maker's specifications, this can also cause a run-away.

And finally, don't use a g.d.o. on your coils with the transistors in circuit. As you will realise a g.d.o. puts out a fair bit of r.f. and the transference of energy to a resonate coil is quite large and this could cause damage to the transistor.

So there are your possible troubles, all of which can be overcome by using sockets and removing the transistors before making any soldering or troublesome adjustments to your gear.

PERFORMANCE

Now having got all that digested, that is the construction problem overcome, what other worries do we have with transistors? So we go back to noise, etc., etc. I fear you may have been given the wrong slant somewhere. At audio frequencies, transistors do show a relatively poor noise figure and it is very hard to get an amplifier to show better than —45 db., but at r.f. do

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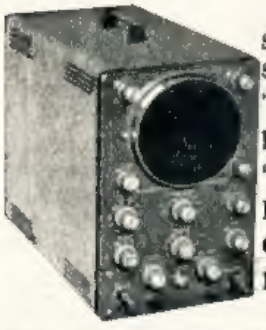

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Weight 8 lb. Size: 9½ x 6½ x 5 in.

PRICE: £15/8/0

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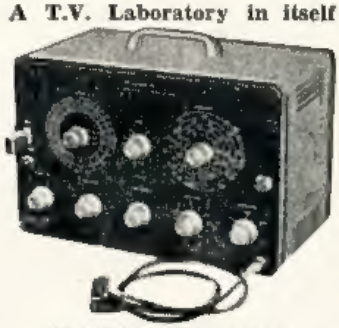

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Band	Coil Details (½" slug-tuned formers)	C1 (pF.)	C2 (pF.)	Crystal	I.F. Range
28 Mc.	L1—12 turns, No. 20 enam. tap at 4th turn. L2—2 turns, No. 20 enam. L3—12 turns, No. 20 enam. L4—2 turns, No. 24 enam.	15	15	9283 Kc. 3rd overtone	650-1600 Kc.
21 Mc.	L1—15 turns, No. 20 enam. tap at 5th turn. L2—3 turns, No. 20 enam. L3—15 turns, No. 20 enam. L4—2 turns, No. 24 enam.	15	15	6783 Kc. 3rd overtone	650-1100 Kc.
14 Mc.	L1—23 turns, No. 24 enam. tap at 6th turn. L2—5 turns, No. 24 enam. L3—26 turns, No. 24 enam. L4—3 turns, No. 24 enam.	15	15	4450 Kc. 3rd overtone	650-1000 Kc.
7 Mc.	L1—35 turns, No. 28 enam. tap at 10th turn. L2—6 turns, No. 28 enam. L3—40 turns, No. 28 enam. L4—4 turns, No. 28 enam.	33	33	6350 Kc.	650-950 Kc.
4 Mc.	L1—58 turns, No. 40 enam. tap at 16th turn. L2—8 turns, No. 33 enam. L3—80 turns, No. 33 enam. L4—5 turns, No. 35 enam.	40	40	2850 Kc.	650-1150 Kc.
1.8 Mc.	L1—140 turns, No. 40 en. tap at 25th turn. L2—10 turns, No. 36 enam. L3—100 turns, No. 36 en. L4—10 turns, No. 36 enam.	40	40	2700 Kc.	700-900 Kc.

Table 1.—Coil Information.

these figures worry us? Is their a communications set where, with the aerial terminals shorted to earth, you could get better figures than 30 db. noise? and that noise is coming from the i.f. valves, coils, audio, etc. So what of the —45 db. noise? Not much good for broadcast stations maybe, but certainly better than most communications sets, so it appears as though noise is not the problem.

Sensitivity is equal to, and in most cases, better than the usual run of r.f. and mixer valves.

Stability.—As we have no warm-up period, we have no heat drift, and as with this unit it is crystal locked, so all we have to consider is the drift of the b.c. receiver which is small enough to be disregarded

Considering all the above points, it rather looks as though our mobile receiver is starting to look like a good communications receiver without some of the refinements such as crystal gates, b.f.o. and S meter, etc., but very useable as a mobile unit with no worry regarding power supply.

SIMPLICITY

Having overcome your horror of transistors, I hope, let us consider the transistored mobile converter. As with all converters for mobile work they must be small, efficient, simple and able to be set up in the car without complicated power connections. This unit is built in one section of an AR7 coil box so that with a complete AR7 plug-in unit, one could have four converters complete with batteries for each unit. Small enough?

The crystal controlled converter described in this article has many features that should appeal to the mobile operator as well as to the experimenter who is interested in transistor circuitry. One of the most interesting characteristics of the circuit is the simplicity. It is crystal controlled, fixed tuned converter which can be made very compact and exhibits excellent performance when used in conjunction with the automobile receiver. With the popular Q5-er from the Command set series, it proves equally effective, though slight modification to the oscillator frequency is necessary. This should also be a particular attraction to the novice who desires additional bandspread for 80 and 40 metres.

All the components for the converter are housed in a small minibox that can be concealed behind the dashboard of the car. This contributes to much better family relations in cases where the XYL objects to the many dangling devices that some of us so frequently mount in plain sight under the dash.

Special consideration was given to the stability of the unit. For this reason the author decided to incorporate crystal controlled on the oscillator circuit. This not only contributes to stable operation but reduces the complexity of the initial adjustment.

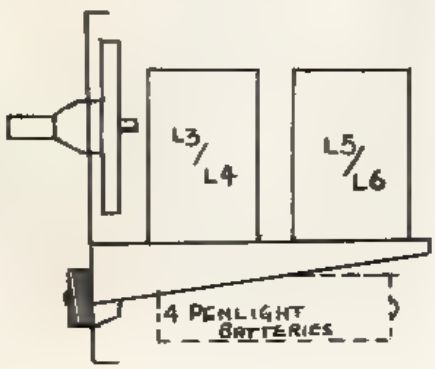
The oscillator circuit is a transistorised version of the ever popular triode Pierce. There is nothing tricky about the operation. Injection for the mixer is taken from a small link which is wound over the cold end of the oscillator tank coil. The emitter of the mixer transistor is returned to ground through this link. The mixer circuit corresponds to a triode vacuum-tube mixer utilising cathode injection from the oscillator, the major difference being the low input impedance of the transistor base as compared with the relatively high input impedance of a vacuum-tube grid. The crystal used in the oscillator portion of the converter is of the surplus variety for fundamental operation. Although many surplus crystals lend themselves to overtone operation quite readily, the author has experienced difficulty on various occasions in getting some of them to oscillate easily in the overtone mode, and more satisfactory results should be obtained by using overtone crystals for 20, 15 and 10 metre operation.

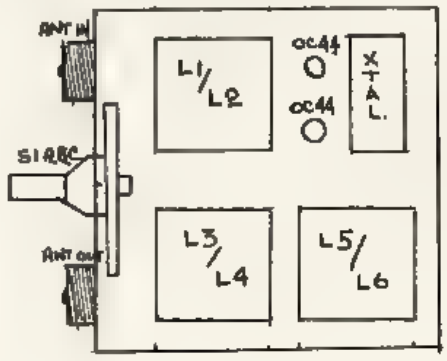
The inductances are wound on slug tuned forms and shunted with the capacitances shown in Table 1.

The circuit shows a NE-2 neon connected from the high impedance end of L1 to ground, this gives a measure of protection for the mixer transistor in the event that an unsafe amount of r.f. energy is introduced into the converter. A zener diode, such as the ZA-6, may be substituted for the NE-2 and will break down at a lower voltage (6) to give better protection.

The converter requires 6 volts d.c. for operation and takes on the order of 2 mA. of current. For all practical purposes, four penlite cells, series connected seem to be logical choice for powering the unit. The choice of dry cells serves two important purposes. First, it eliminates one of the prime sources of ignition interference, various noises from the electrical system of the car are carried into the converter via the leads which supply power to it. By using self-contained batteries, this possibility is eliminated. The second appealing feature from the

(Continued on Page 23)





Figs. 2 and 3.—Suggested layout drawn for a 3" square chassis, to fit a 3" cube box.

VK2AQU Mark I.

C. G. HARVEY*

★ Proof that single sideband gear can be built by any Amateur. This article may tempt you to cut your carrier and join the ranks of sidebanders.

LOOKED at the cost of Commercial 100 watt p.e.p. s.s.b. stations lately? Sure they look nice, but the change out of a thousand db. wouldn't buy a life membership of the Institute

If you have a junk box, and perhaps a fiver or so for an audio p.s.n., and the inevitable odd capacitor and resistor, etc., whose value never seems to be in the box when wanted, you too can have a kiloquids' worth of fun.

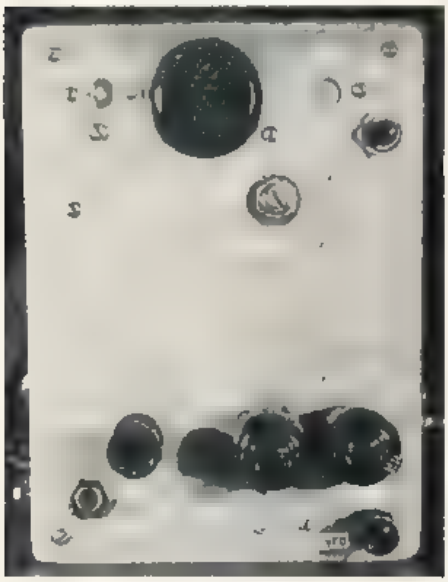


Fig. 2—Front view of the exciter The tuning indicator has been removed Note the interlock push switch at top right for easy checks on netting accuracy Simple enough?

Probably, like I was in 1958, you have been frightened off s.s.b. by theoretical articles on lattice filters or linear amps., or even by the fear that a shack full of test gear is necessary to get going This happened to me until my old friend, Bud VK2AQJ, provoked me into belated action with well aimed VOX tactics. Another c w operator bit the dust for certain, when, after a week-end's work, a few old tubes potentiometers and old fashioned 1 watt carbons produced a VOX which worked like a charm first up

It is not the intention here to sell s s b. or to give a nut by volt description of VK2AQU circuitry, but rather to show one way that it has been done successfully without ever having seen

* 52 McCauley Avenue, Glenbrook, N.S.W.

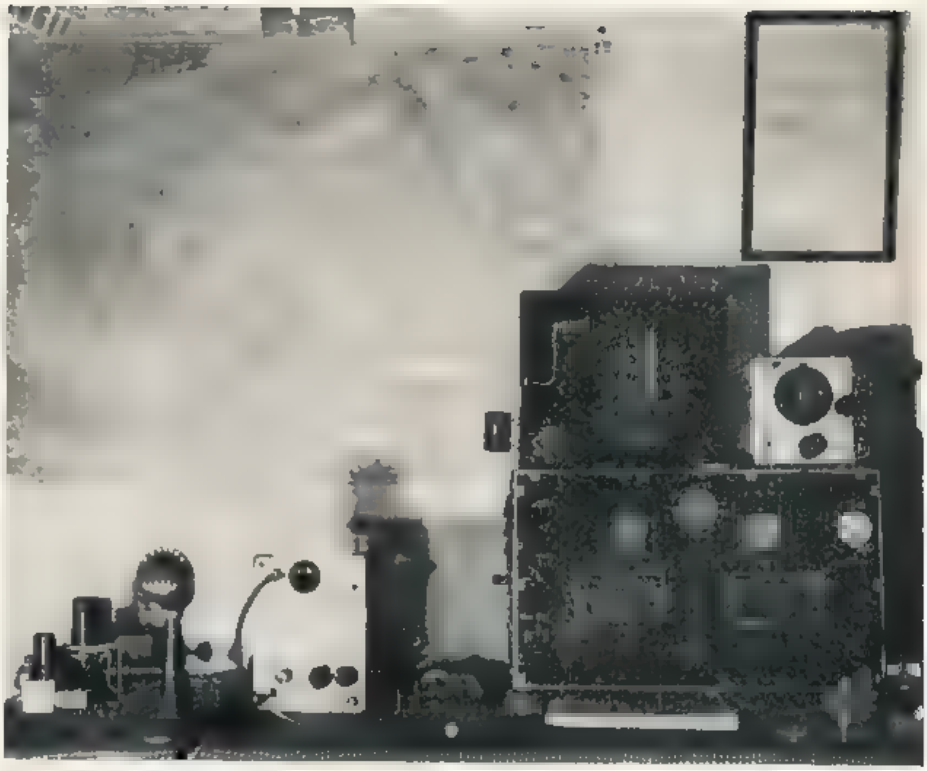


Fig. 1—VK2AQU 1960. The VOX can be seen at the left of the s.s b exciter The small unit in front of the VOX is the 1,000 c.p.s. tone oscillator Two important aids to s.s.b. operation are the Teledex and egg-timer (centre) The field strength meter provides a continuous check on speech level.

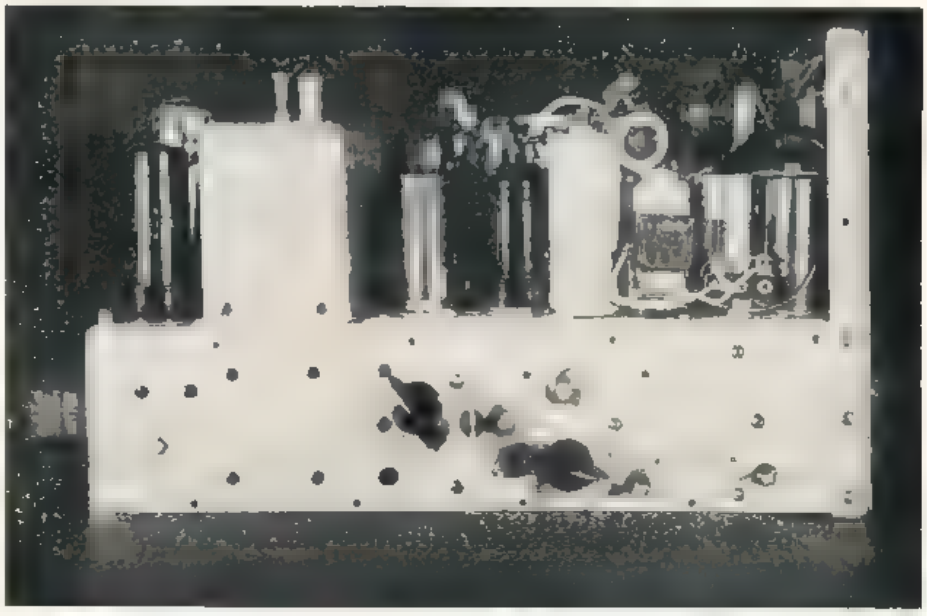


Fig 3. Left hand view of the chassis. The metal film cassette next to the 12K8 signal mixer was an after-thought found necessary to keep induced r f from the p a out of the low level grid circuit. The audio filter label refers to the slugs of two t.v width coils used as a low pass filter. The magic eye fits in above the shielded xtal and the p.s.n. at the right of the chassis.

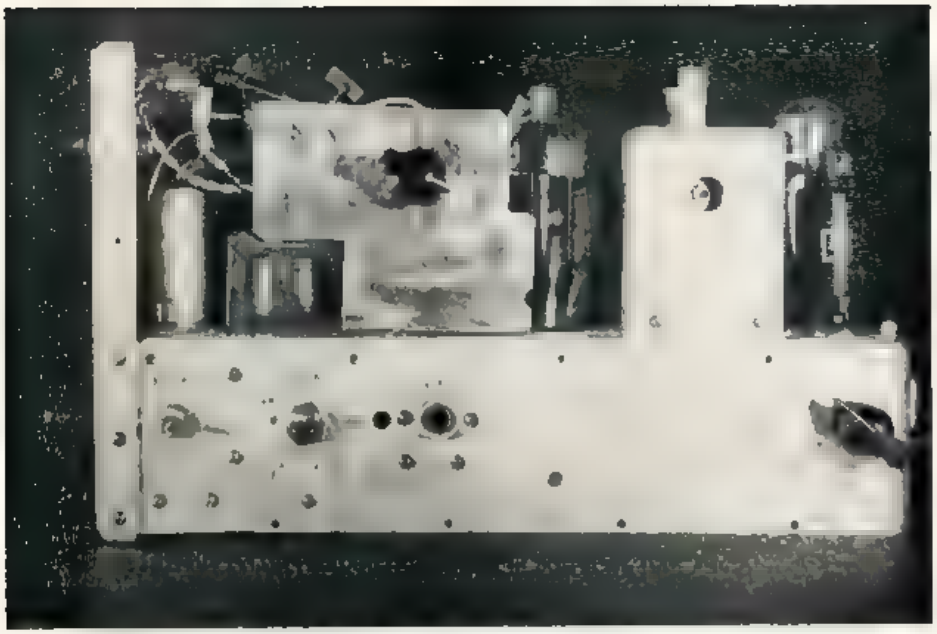


Fig. 4.—Right hand view. The 1625 was used intentionally to bring the plate tank circuitry above deck level. One of the balanced modulators can be seen at the left.

TYPICAL TEST CONDITIONS

Audio input	0.15v., 1,000 c.p.s.
Bal. Mod inputs	0.35v and 0.58v., 1,000 c.p.s.
Signal mix., grid	1.2v., 8.8 Mc.
Signal mix., plate	2v., 7 Mc.
Buffer plate*	6½v., 7 Mc.
Driver plate	125v., 7 Mc
VOX input	4v., 1,000 c.p.s.
V.f.o. output	8v., 5 Mc.
Signal Mixer injection	1½v., 1.6 Mc
P.s.n. inputs	0.1v. and 0.6v., 1,000 c.p.s.
Balanced audio outputs	1.1v. and 1.3v., 1,000 c.p.s.
HT, on load	300v. d.c
Cut off bias	200v. d.c.
Mixer cathode	3½v. d.c.
Driver cathode	21v. d.c.

All masurements made with high grade v.t.v.m., with audio level set to arbitrary level, below flat topping point.

* Swamped by 4.7K.

Table 1.—The real trick to getting going on s.s.b.—knowing what to expect!

another s.s.b. rig. This isn't to say I would do it again this way, but my initial experiences may consolidate your own views. Lots of a.m. stations have expressed interest in s.s.b., but because they don't really yet know what is involved, are hesitant about commiting themselves

The accompanying photos and drawings may give them the necessary incentive to "have a go" particularly as the station has been active long enough for many Amateurs to know how it performs. Table 1 is the heart of the problem because once you know what levels you are dealing with, any competent Amateur can use the components he has available to get the stage gains necessary Simply remember that experimenting is not encouraged in the critical audio p.s.n., where changes of 1 degree in phase shift (or 1% in audio gain in the p.p. stage after the network) will adversely affect the unwanted sideband suppression. With the figures mentioned, you should get about 40 db suppression, although half this is useable (but not desired) on the bands at present. However, I strongly suggest you spend a couple of db. on the Australian Aswel commercial network, and remove any doubt as to eventual performance. This then is the only unavoidable expense

Anything that is serviceable can be put to use in the rest of the gear, pride permitting My pride permits me to use some components that put VK3UO on the air in 1936—so don't be bashful In fact VK3 Amateurs who remember Renn Millar and Charlie Vaude might sense that the exciter front panel is an old aluminium acetate disk of these pre-war minstrels

Another critical field is bias and drive. Treat the exciter as though it was a hi-fi amp., run it Class A, and quietly at that; keep the load impedance correct and low, keep it stable, and give it lots of reservoir capacity in the power supply

Fig. 4a.—Part of top view of the chassis

No one circuit will suit everybody, so play about with the many ideas that fill the pages of the A.R.R.L. Sideband Handbook and the "CQ" Sideband Handbook.

I used a Command chassis simply as a matter of convenience. You can find space to bandswitch three bands if you try hard, but I decided to remove the third band when more shielding was needed than originally provided. Best put the shields in first and be sure, rather than find them necessary later and have no room! Treat the exciter like the r.f. end of a hot receiver and there'll be no trouble that swamping or loading won't cure. Don't forget the field from the s.s.b. generator is fairly strong and can get into low level mixer and balanced modulators unless tied down with aluminium.

V.f.o. stability is a re-requisite. There must be negligible random drift otherwise resolved speech quality will suffer and of course long term stability must be better than 100 c.p.s. if you want to

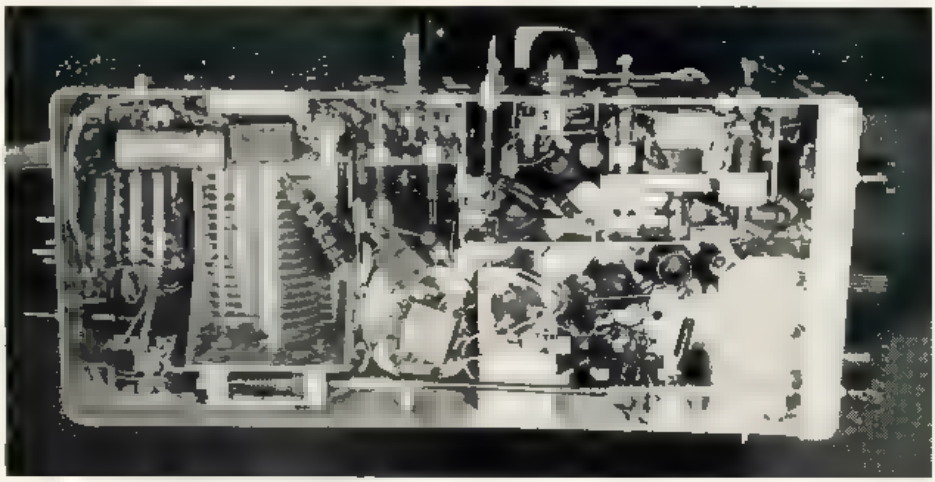


Fig 5. Don't let this frighten you off! A bit of thought in wiring procedure and shields cut to allow bottom layer components to lie in the best direction, do the trick. The r.f. p.s.n. can be seen top left, and the completely shielded balanced modulator circuitry is next door. The point one, bottom right, was needed to shift a 7 Mc. resonance in the h.t. wiring.

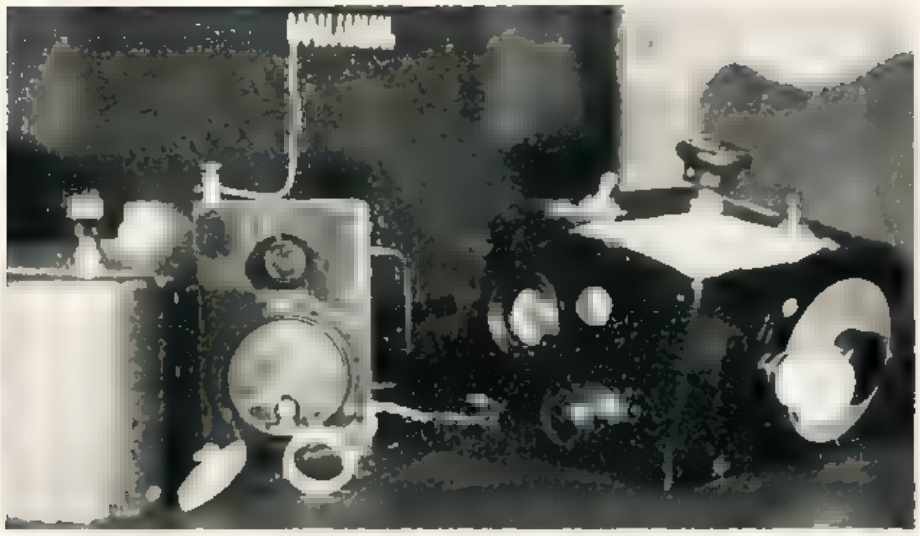


Fig. 6.—Test gear? I get by with a g.d.o. (right) modified to provide a small diameter link coupling coil which will reach into the innards during initial setting up of the slug-tuned coils. The same link fits the field strength meter so either can be used for tune-up once the band has been found. All output adjustments are made against the field strength meter (centre). The heli-x provides more than enough r.f. input. The c.r.o. (see Fig. 7) gets its r.f. input via the small link on the left and a tuned circuit in the old coil can adjacent.

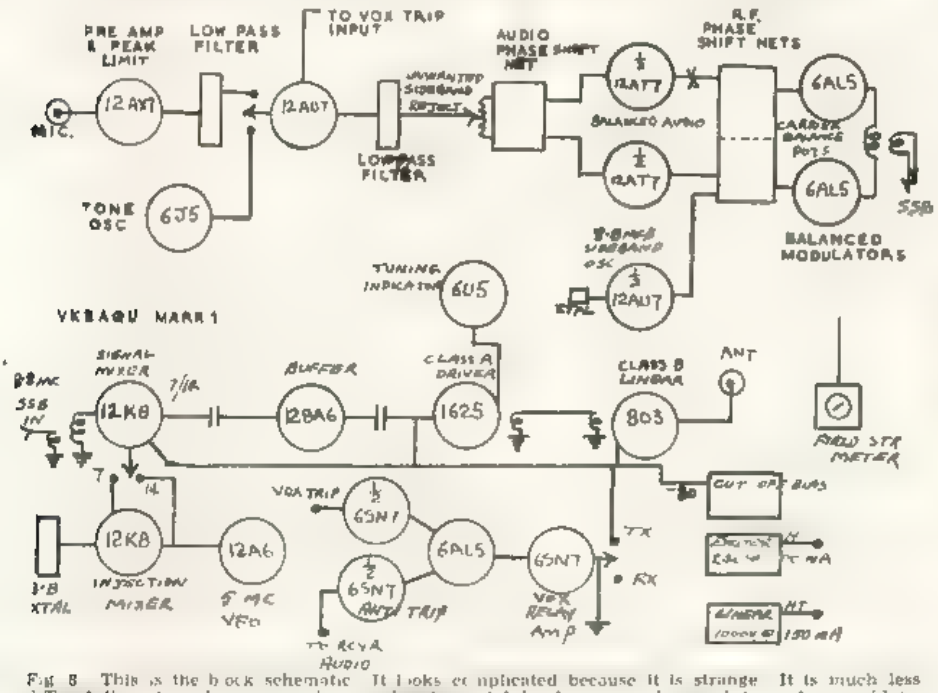


Fig. 8. This is the block schematic. It looks complicated because it is strange. It is much less difficult than TV. Any reasonable combination of tube types can be used to suit your ideas.

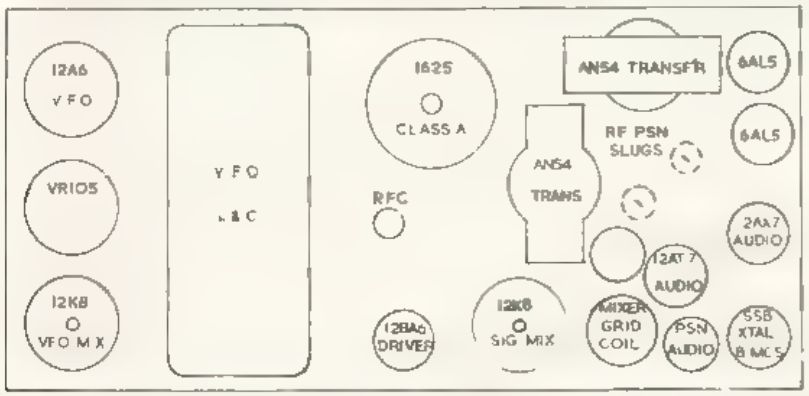


Fig. 9.—The bird's eye view. It looks worse in the photo, because all the output tank circuit switching appears to clutter things up. This doesn't matter. It can't been seen with cover on.

stay in multi-station s.s.b. nets without comment. This order of stability is relatively easy to achieve if you use your commonsense.

The only real troubles here at VK2AQU have been caused by two faulty screen dropping resistors in the mixer circuits, giving intermittent and finally low output, instability when buffer and driver were tuned to resonance with the p.a. on, and unstable carrier suppression caused by improper earthing of butt-joined shielding which allowed r.f. hotspots to develop when the p.a. was radiating.

This instability problem wasn't recognised for what it was until I had tried half a dozen different fixes, including a grounded grid buffer. Eventually, I discovered that the volt or so input to the mixer grid became a magic 7 volts with the p.a. radiating! A shielded grid coil provided an immediate fix and would have saved a lot of hair scratching had the cause been recognised earlier. So, take a hint OM. Shield things adequately at the start. Even wire in shielded cable if you like, be-

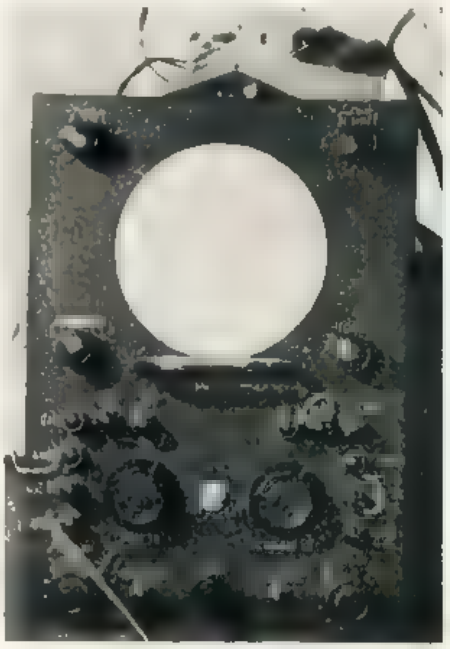


Fig. 7.—Cathode Ray Oscilloscope. I do use a c.r.o. for p.s.n. line-up. It's a conventional audio type seen here with the microphone pre-amp. on top and under test.

cause it all helps. T.v.i. is almost a thing of the past with s.s.b. using this type of constructional technique.

In regard to design technique, Ohms Law and the A.R.R.L. Handbook are adequate. It's a different story though, if you wish to calculate and design load impedances for the Class B linear, because the Handbook tables are for Class C conditions, which are n.b.g. if you want soup from a s.s.b. linear. Better to use the rule of thumb, "20 mx coils for 40 mx s.s.b., 40 mx coils for 80 mx s.s.b.," then trim them to frequency with sufficient C for resonance. It is better to have too much C than too little.

In regard to low level transmitter mixers, follow normal receiver design; keep the injection volts down to a low

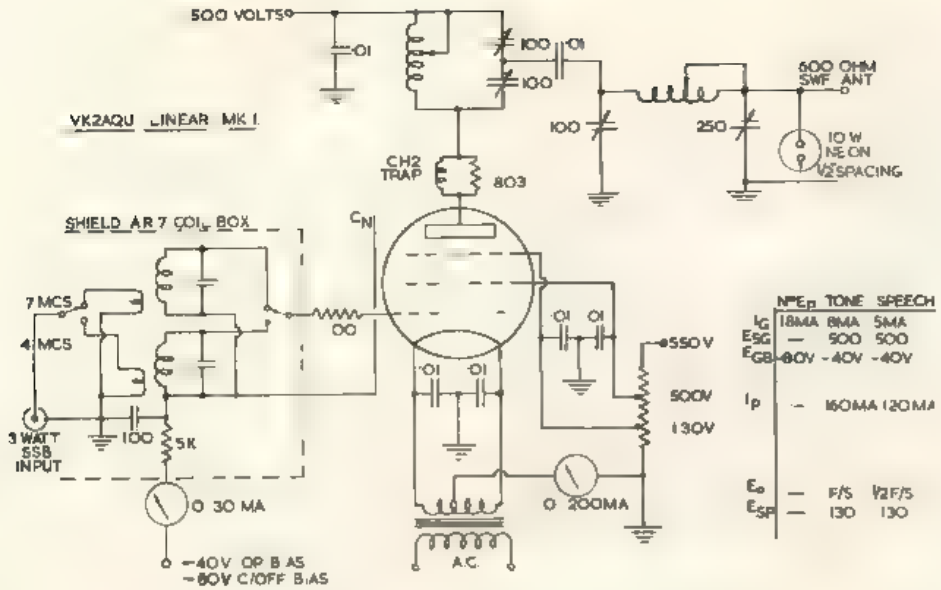


Fig. 10.—Don't let Linear Amplifiers bluff you. This one used to be a Class C c.w. amplifier and doesn't know any difference now it has a new grid circuit and more C in the plate tank.

value and don't try and light a pea lamp off the plate of a 12K8! If you overdrive any stage, the signal won't sound good, and if a mixer is involved, the chances of spurious radiation of the primary frequencies are very high.

This is why I prefer to mix at low level, but other experimenters have had success mixing after one stage of 8 meg amplification. By keeping things running quietly, nearby Amateurs will not be inconvenienced and their a.m. receivers with a.v.c. "on" won't leap off the table every time you make with the duck chatter. For example, VK2OZ and I can, and do, both operate 40 metre phone, even though we are line of sight, about 500 yards apart. Neither of us occupy more than 10 Kc. of each other's receiver.

Finally, the best way to sort out your doubts or troubles is to put a signal (a.m. counts) on the air, in a s.s.b. net and then thrash things out with the gang. However, might I suggest that as time is usually at a premium for most of us these days, every minute of Amateur Radio has to be made to count to best advantage. This, one can do with VOX. No more monologues, no more rockets for being late for meals, no lost time due to QRM or QSB, only man-to-man human contact, question and answer, and an immediate check on cause and effect when testing

So, if you can't manage VOX first off, please include push-to-talk it will help others to help you. VK2AQU Mk. I, is the way I get more out of Amateur Radio in 1960—there are a thousand other ways. How about you having a go at regular trans-Pacific phone on 40 mx? It's there for the asking—with s.s.b.! Come and join the net! ●

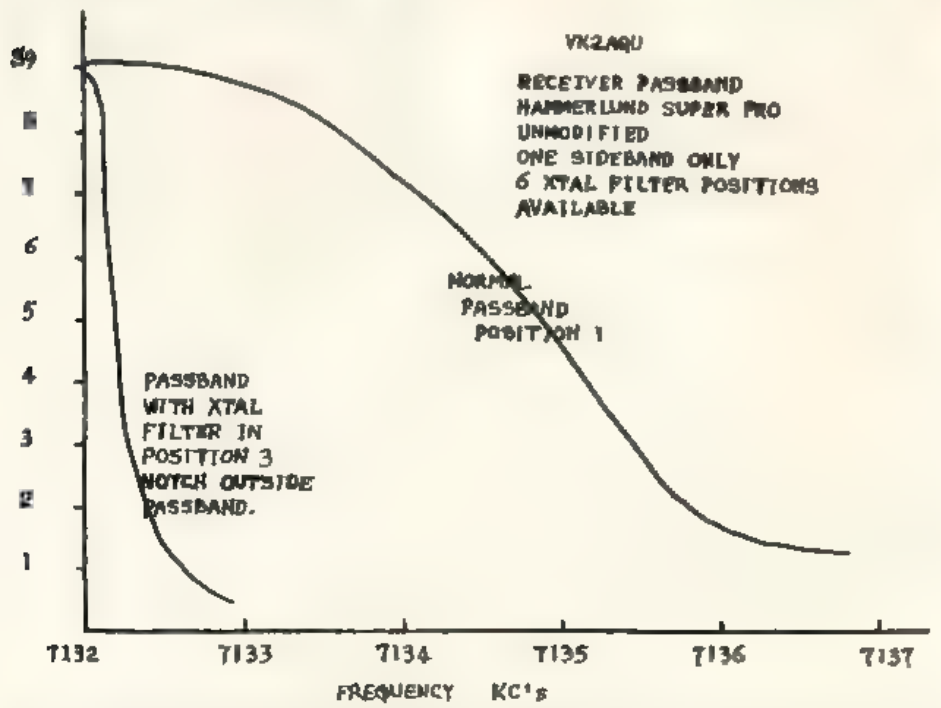


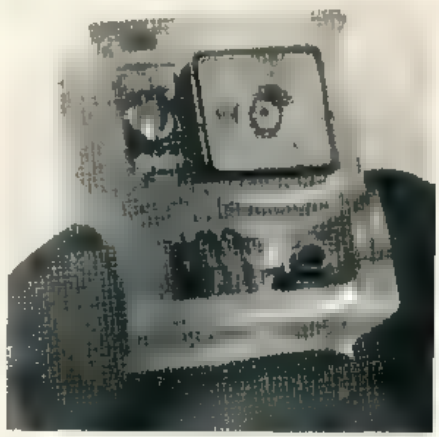
Fig. 11.—It's nice to have razor edge selectivity, but it isn't necessary. I often copy s.s.b. with the receiver passband as at position 1 Of course when the going gets rough or I want some more db's. of S N ratio, in goes the selectivity This is why you mightn't be heard if you don't zero in accurately!

— . . . —

TUNNEL DIODE STORY

(Continued from Page 6)

it is sufficient to know only that this means that the diode still has a negative resistance while it is oscillating. We can make further use of this by adding another parallel-tuned circuit, tuned to a different frequency, in series with the oscillator tank This circuit "sees" a negative resistance. If its resonant impedance is slightly less than the impedance of the oscillator tank, it will amplify at this new frequency. We can add still another tuned circuit and use it as an amplifier also by following the same procedure. As an example, we have had a circuit operating, using a single tunnel diode, that was an r.f. amplifier (100 Mc), an oscillator (110 Mc.), and a mixer and i.f. amplifier (10 Mc.)!



Laboratory style tunnel diode (original prototype). Semiconductor bodies are alloy and germanium crystal

A few of the successful applications of the tunnel diode are as quartz-crystal controlled oscillators, utilising the series or parallel resonance of the crystal; frequency-modulated oscillators, regenerative frequency dividers, counters; logic elements; amplifiers and combination oscillator-amplifiers. The list is growing daily. ●

★

DID YOU WRITE THIS?

Would the author of the article "Simplified Method of Determining Modulation Transformer Ratios" please promptly advise the Publications Committee of his name as this has been mislaid and is required for credit titles on the article.

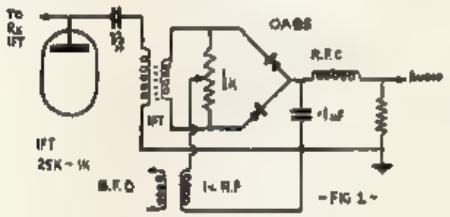
Product Detector/Balanced Demodulator

LESTER A. EARNSHAW,* ZL1AAX

THE SIMPLEST YET!

Recent investigations into the balanced demodulator for single sideband reception showed this circuit to be even simplier than the product detector. (In actual fact, of course, there's little difference between the two. Both mix the signal with the b.f.o. and extract the wanted difference. Perhaps a more exact definition is that the product detector output is the arithmetical product of the two inputs, whereas the demodulator output is the geometrical mean of the two inputs. And even this does not always apply! But that's by the bye!)

A balanced modulator is familiar to most. We use it to modulate the carrier and then we balance out the carrier and leave but the two sidebands (which makes a delightfully simple double sideband rig). Note that the balanced modulator performs two separate functions: (a) It mixes the audio with the carrier, and (b) it balances out the carrier. As a rule both operations are performed simultaneously, but this need not always be the case. If the carrier is applied to the balanced modulator in, say, the parallel mode, then the output must be connected in push-pull if carrier cancellation is to be obtained. Or conversely, if the input is in push-pull then the output must be in parallel.



Just as the balanced modulator may be used to mix the audio with the carrier, so may the modulator be used to mix a carrier (b.f.o.) with a signal to produce a difference or audio output. Only now we call it a demodulator. This process may be performed by most of the conventional balanced modulator systems, but that shown in Fig 1, which was arrived at only after much deliberation and experimentation, has a number of important advantages. These may be listed as follows:

(a) No tapped i.f's., coils or audio transformers are required.

(b) Because the carrier is applied in parallel and the signal in push-pull, it is not possible for b.f.o. voltage to be fed back into the i.f. amplifier to the detriment of the a.g.c system. This latter point is important and will result in a false a.g.c. voltage being developed and applied to the front end of the receiver. Weak signals will consequently be lost.

(c) Only about 1 volt of b.f.o. voltage is required.

(d) Although the demodulator places a half wave load on the b.f.o., the opposite and equal action of the diodes holds the load constant. This reduces the tendency toward f.m. modulation of the b.f.o. by the signal. This last reason is important in transistor circuitry and was the cause of attention being paid to the balanced demodulator as a sideband detector

(e) B.f.o. harmonics are negligble.

(f) Output is low impedance and of an order which makes matching between transistor circuits and the demodulator ideal.

(g) Simplicity and economy of components.

(h) No fussy adjustments to make.

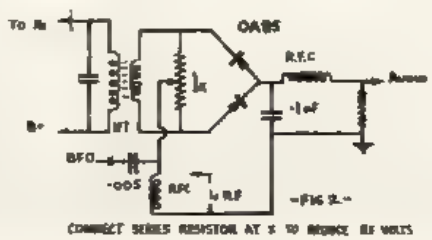
(i) High audio output. Sufficient to drive the usual receiver audio such as a 6AV6 to a 6AQ5 to overload providing a 1/6 step-up transformer is used. Without the transformer, output is still reasonable.

CONSTRUCTION

The components may be mounted on a tag board and placed in a convenient part of the receiver chassis or cabinet. The b.f.o. and signal input leads **must** be shielded. R1 may be a 1,000 ohm potentiometer or two 470 ohm resistors. A potentiometer will allow the perfectionist to adjust for a null of the a.m. signal when the b.f.o. is off. If there is more than a "whisper" of output when the b.f.o. is off, the detector is functioning incorrectly. By moving the potentiometer to one side of its range, a.m. operation will take place in the normal manner although output will be down compared with the sideband condition

The two diodes should be approximately matched for equal **forward** resistance. Their reverse resistance is of little consequence. Preferably choose diodes with a low forward resistance.

Almost any transistor i.f. transformer may be used at IFT1. Ideally this should be about 25K to 1,000 ohms for transistors but for tubes or transistors this is not critical. The transformer may be directly connected to the last i.f. amplifier plate or collector, or capacitively coupled in the manner shown.

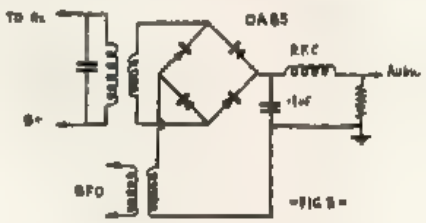


CONNECT SERIES RESISTOR AT X TO REDUCE AS VOLTS

THE B.F.O.

The b.f.o. is an important part of any sideband detection system. A transistor b.f.o. should be followed by a buffer-amplifier stage. A tube should be a pentode with the oscillatory circuit between the cathode and screen. Output to the demodulator should be taken from the plate either through a step-down transistor i.f. transformer or through a capacitor. In the latter case an r.f. choke should be connected from the potentiometer moving arm to ground. B.f.o. voltage at the potentiometer should be approximately 1 volt or more. There is little point in using a very large b.f.o. voltage and, in fact, this may possibly produce troublesome harmonics. Surplus voltage should be dissipated in a series connected resistor. **Insufficient b.f.o. voltage will result in severe distortion of the signal.** With a two-stage i.f. in the receiver, output from the secondary of the transistor i.f. should not exceed about 0.2 volt. A higher output here will create distortion unless the b.f.o. voltage likewise is increased. A ratio of 10/1 on average signals with the maximum certainly not exceeding 5/1 will give the best all round results.

Remember this; when the signal voltage exceeds the b.f.o. voltage, you have a bad case of overmodulation taking place in your own receiver!



A QUAD DEMODULATOR HAS HIGHER OUTPUT

THE QUAD DEMODULATOR

In Fig. 1 the two halves of the potentiometer make two legs of a bridge circuit of which the two diodes were the other two legs By replacing the two resistors with two more diodes, we increase the output of the demodulator by about two. Advantage of this system is that the demodulator now imposes a full wave load upon the b.f.o. and as a consequence there is less likelihood of f.m. modulation by the signal. The increased output comes from the lower forward resistance of the diodes, this being appreciably lower than the value of resistors they replaced.

IN GENERAL

It is indeed surprising that Amateurs have not made greater use of the balanced demodulators in s.s.b. telephony The very simplicity of these non-power consuming devices make them particularly attractive. It is pointed out that a great number of simular and different configurations were bypassed. Perhaps one day . . . !

* P.O. Box 51, Warkworth, New Zealand.

S.W.R. Measurements with the TA-33 Jr. Triband Antenna*

C. I. PATTERSON,† VK4YP

MANY Australian Amateurs have invested in one of these beams and many more are no doubt considering doing so.

The assembly instructions specify two different element lengths, one for c.w. and the other for phone operation, so the choice is made by the owner prior to hoisting the beam into its operating position.

The c.w. position midpoint frequencies are stated to be 14150, 21150, 28500 and the phone midpoint frequencies 14250, 21350, and 29000, with a reasonably low s.w.r. over the rest of each Amateur band.

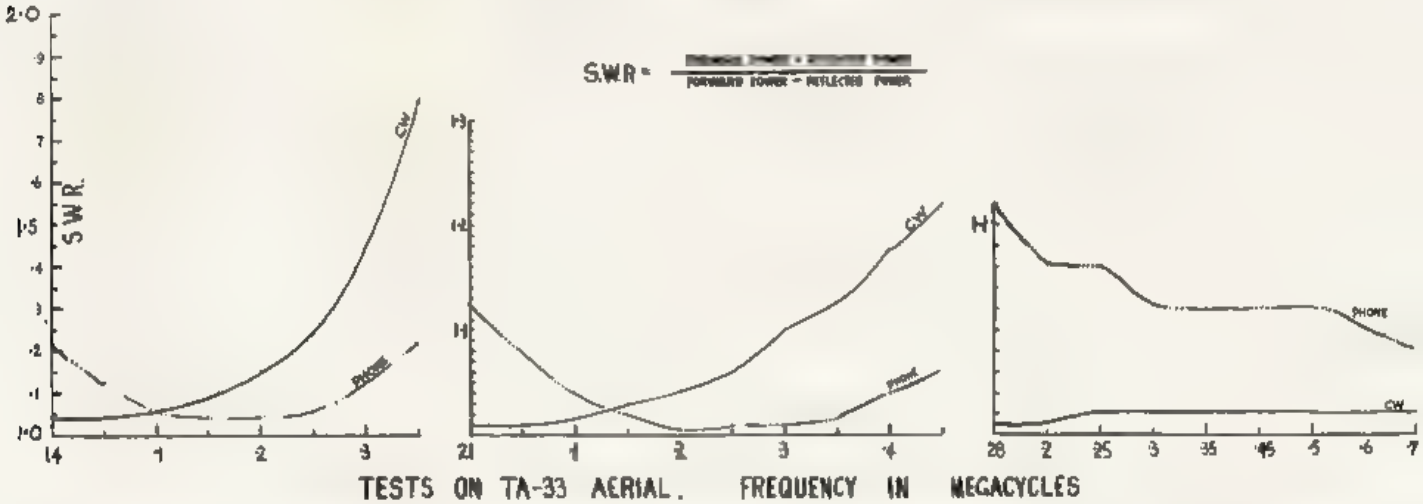
The purpose of this article is to show in detail the reflected power actually measured over each of the three bands with a TA-33 Jr. assembled for both the c.w. and phone midpoint frequencies. It is hoped that a study of these results will help Amateurs to decide which of the alternative assembly instructions will be more suitable to them and to remove the nagging doubts most of us have as to whether or not we have made the correct decision when we are not in a position to prove it to be so.

In actual fact the s.w.r. is not a matter of life and death as many of us believe, but nevertheless it is a perennial topic on the Ham bands and at least it is comforting to know that one's own co-ax line is operating according to generally accepted principles.

The measurements shown were taken at an antenna height of 45 feet. A cross check at 35 and 30 feet showed a tendency to increasing s.w.r. as the height was reduced.

A Micro Match Unit was adjusted to read 100 watts forward power in the RG-8U transmission line and the reflected power noted at various frequencies in each band.

† Fig Tree Pocket Road, Fig Tree Pocket, Brisbane, Qld.



The s.w.r. is easily determined by the formula:

$$\text{S.W.R.} = \frac{\text{F.S.M. Reading} + \text{Reflected Reading}}{\text{F.S.M. Reading} - \text{Reflected Reading}}$$

(F.S.M.: Full Scale Meter)

From the accompanying graphs, the highest reflected power reading for the "c.w." assembly is 28 watts. From the formula we have:

$$\text{S.W.R.} = \frac{100 + 28}{100 - 28}$$

$$= 128 \div 72 = 1.8 \text{ to } 1.$$

Similarly, the highest reading with the "phone" assembly of 10 watts is equal to a s.w.r. of 1.2 to 1.

To summarise, it would appear that the "phone" assembly is better than the "c.w." assembly for all-band operation.

To generalise, experience has shown that the TA-33 does everything claimed by the manufacturers, including forward gain, front-to-back ratio, and s.w.r. ●

The R1155 Receiver—Part Two

A. G. MULCAHY,* VK2ACV

The R1155 was produced in several versions, a summary of which is given below.

Receiver Type No.	Basic Type	Modifications
R1155	—	Basic unit.
R1155A	R1155	R.f. interference filters added
R1155B	R1155	Additional r.f. filtering added.
R1155C	R1155B	H.f./d.f. added for Coastal Command
R1155D	R1155	Steel case
R1155E	R1155A	„ „
R1155F	R1155B	„ „
R1155L	R1155B	1.5/3.3 Mc. range replaced the 75/200 Kc range.
R1155M	R1155A	Units rejected for use in aircraft.
R1155N	R1155L	1155L with a steel case.

It is obvious from the above that four basic units exist and, of these, the R1155, R1155A and 1155B are effectively identical and were described last month. The 1155L (and the more common 1155N) is therefore the only real departure from the standard unit and this is by way of substituting the 75-200 Kc. band for the 1.5-3.3 Mc. band.

See Fig. 1 September issue for a schematic and parts list.

★ A detailed description of this receiver together with a series of valve substitutions which will replace the original valves. The a.v.c. characteristic is worthy of study for anyone requiring an effective a.v.c. control circuit.

ELECTRICAL SPECIFICATIONS

Sensitivity (at 210 Kc.): 12 μV. for 50 mW., 6 db. signal-to-noise ratio.

At 16 Mc.: 6 μV. for 50 mW., 6 db. signal-to-noise ratio.

Selectivity: 4.3 Kc. bandwidth at 6 db. attenuation

Audio: 100 mW. in 5,000 ohms, maximum.

CONVERSION

The average Amateur will have no use for the d.f. circuit (which is not described here) and a little careful sniping will produce a fair amount of spare chassis and panel space once these components have been removed. **Remember** that any valves removed will decrease the back bias developed across R1 and in the event that this causes distortion, R1 should be increased from 2,000 ohms to 2,500 ohms. (In some receivers R1 is 4,700 ohms.)

The following may be removed from the front panel (i.e. d.f controls): meter balance, meter amplitude, meter deflection, aural sense, L-R switch, and the switch-speed switch.

The filter switch front panel control may be removed if desired as this switch attenuates all frequencies below 400 c.p.s. If you remove the switch, remove C10 and L29 and wire C96 permanently across C8 and C9.

POWER SUPPLY

The requirements are: 217 volts at 110 mA. for the original set. When building the power supply, ensure that the negative lead is brought out as a separate terminal and is **not** connected to the power supply chassis. If this is not done, there will be no back bias developed across R1. **Do not exceed 250 volts h.t., otherwise you will blow the condensers in the set. For this reason choke input is preferable to a condenser input filter which will have a higher no-load voltage.**

* 45 Louie Street, Padstow, N.S.W.

AERIAL INPUT

The receiver employs two aerial input circuits, the fixed input is designed for aerials between 25-65 feet long, whilst the trailing aerial input is for aerials up to 200 feet long. If a singular aerial is used, bridge pins 1 and 2 of P1. If desired the front panel Jones plug may be removed and replaced by a co-axial socket, with a panel to blank off the resulting hole.

BAND CHANGE SWITCH

This also sets the grid bias for the appropriate range to ensure uniform gain over the entire frequency range.

FUNCTION SWITCH

This switch, labelled "Master Switch" on the circuit diagram, has five positions: Omni, a.v.c., balance, visual, figure of eight.

Omni, or communication reception on the omni-directional aerial, enables manual volume control, the a.v.c. being out of circuit.

A.v.c.: receiver gain set by the a.v.c. action, audio volume set by V8 grid potentiometer. The last three positions are for d.f. work, hence will be omitted from this description. The manual gain control varies the grid bias on V3 to V6 by means of pot. R8, which may apply any potential between —3.6v. to —30v. to V4 and V5 grids, with a lesser bias applied to V3 and V4. The maximum bias appears across R1 and is —30v.

A.V.C.

Automatic gain control of V3, V4, V5 and V6 is had in the a.v.c. position of the function switch. Under these conditions, R8 provides a.f. level control for V8. The a.v.c. delay is the potential across R4 (—3.6v.). On bands 1 and 2 this is reduced to —2.4v. by shunting R4 with R64. The voltage developed across R9, 10, 11 and 12 is divided for V3 and V6. The r.f. amplifier receives half the a.v.c. voltage, V4 and V5 full a.v.c., and V6 receives one-tenth of the a.v.c. voltage. The total a.v.c. delay is 13v. approx achieved by holding V7 cathode positive through a voltage divider from h.t. plus. The delay is reduced on c.w.

The delay employed gives an a.v.c. characteristic which, for 80 db. signal variation, results in an output change of 8 db. The a.v.c. characteristic at 300 Kc., for a 30% modulated 400 c.p.s. signal, shows (with the filter out) a rise from —6 db. to +6 db. when the input rises from zero to 5 μV. At 5 μV. the knee of the curve occurs and an increase from 5 μV. to 1.0 volt results in an increase of audio output of 8 db., i.e. from +6 db. to +14 db. (0 db. equals 10 milliwatts across 5,000 ohms). With the "filter" out, "Het. Osc." on, a 0 db. change in output occurs for a signal increase from 5μV. to 1.0 volt.

B.F.O.

A Colpitt's circuit comprising V7 triode, L22, C14 and C15 is used. A peak output of 42 volts is available at 280 Kc., second harmonic injection being used.

GENERAL

If you leave P2 in situ, remember, when you are groping in the dark, that pin 6 has h.t. on it all times. (This should be masked off for safety.—Ed.)

All valves employed in these receivers may be replaced by octal types. (These will cause a slight degradation in performance when compared with the original valves, which were of a "beam tetrode" type construction, but will provide a highly satisfactory substitute. —Ed.)

For the r.f. and i.f. stages, EF39, 6U7G and 6K7 types are direct substitutes, whilst the 6J8G, 6K8G and ECH35 are suitable for the converter.

Remember to remove h.t. from all pin 1's on the valve sockets before using metallised tubes, otherwise the **outer valve shell will be at h.t. plus.**

The b.f.o. and audio stages may be replaced with a 6B6G.

If you add a higher powered audio output stage, e.g. a 6V6G, return the grid and cathode resistors to the h.t. negative line, and **not** to earth. By so doing, this will avoid the rise in back bias which would result if the 6V6G current had to flow through R1.

★

WORLD AMATEUR POPULATIONS

The United States of America has 201,002 Amateurs calling CQ, which are answered by Great Britains' 9,400, with Brazil (7,200) and Argentina (7,189) very close together but less than Canada (7,900). Germany (6,900 leads the field after the big five, and is then followed by Japan (6,400), Australia (4,000), New Zealand (2,900), South Africa (ZS, 2,899), Sweden (2,200) and France with 2,100. Only five other countries have one thousand Amateurs, and one hundred and nineteen countries have less than one hundred Amateurs.

A 6146 on 2 Metres*

THERE is a problem facing the newcomer to the 2 metre band, namely the obtaining of a suitable final. One is faced with finding a tube which is capable of running reasonable power and which will operate with a minimum of trouble.

My thoughts are centred on a valve type in the QQ series. While realising that these were ideal, I felt they were beyond my pocket. Hence it was decided to compromise in that I would build a transmitter in which a QQE06/40 could be substituted at some future date. Having a spare 6146 (which can be obtained at a reasonable price) and borrowing ideas from here and there, the following transmitter was constructed.

The exciter follows quite normal construction. It consists of a 12AU7, both triodes common as a third overtone oscillator. The slug-tuned coil is from a SCR522 and has 28 gauge wire wound to just cover the well.

The 5763 valve is used as a doubler and drives a 6360 operating as a push-pull tripler to 144 Mc.

This appears to be an excellent valve in this application and is capable of driving a 6/40 to its full output. Care was taken to keep all leads very short. The doubler plate coil and capacitor, and the plate coil, etc., of the tripler, were mounted on opposite sides of the 6360 socket. Controls to the variable capacitors can be brought out to the front panel if desired. Values of variable capacitors and coils are not given as any small butterfly condenser will do and the coil adjusted to resonate at the desired frequency with a g.d. meter.

The final, in my case a 6146, was mounted horizontally on a shield above was the exciter chassis. A tuned grid coil was used and a closely coupled two-turn link fed energy from the exciter. The grid current was set at 3 mA. by varying the coupling

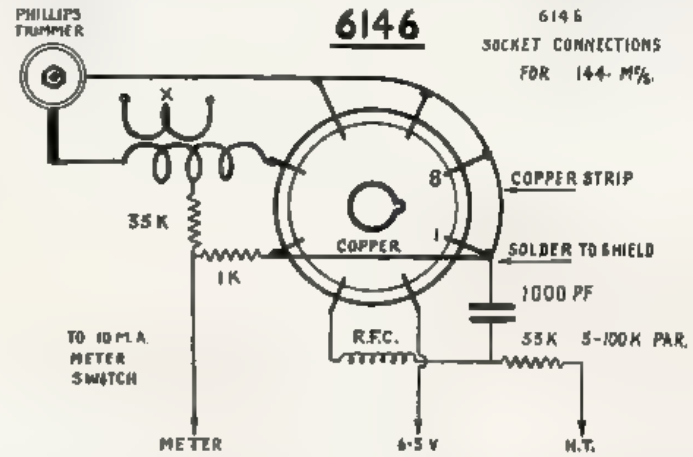
Neutralising was carried out with a coil, in the screen lead, consisting of 28 turns of 29 gauge copper wire wound on a 1 watt I.R.C. resistor. Careful attention was paid to wiring the socket which was a normal spring-mounted octal. A strip of copper was run round all the earth pins and soldered to a common point alongside the socket. The grid resistor and Philips' air trimmer were all soldered to this strip. The plate coil consists of 4 turns of heavy copper wire (10 gauge) soldered directly to the tuning capacitor. The other end is supported by the plate cap.

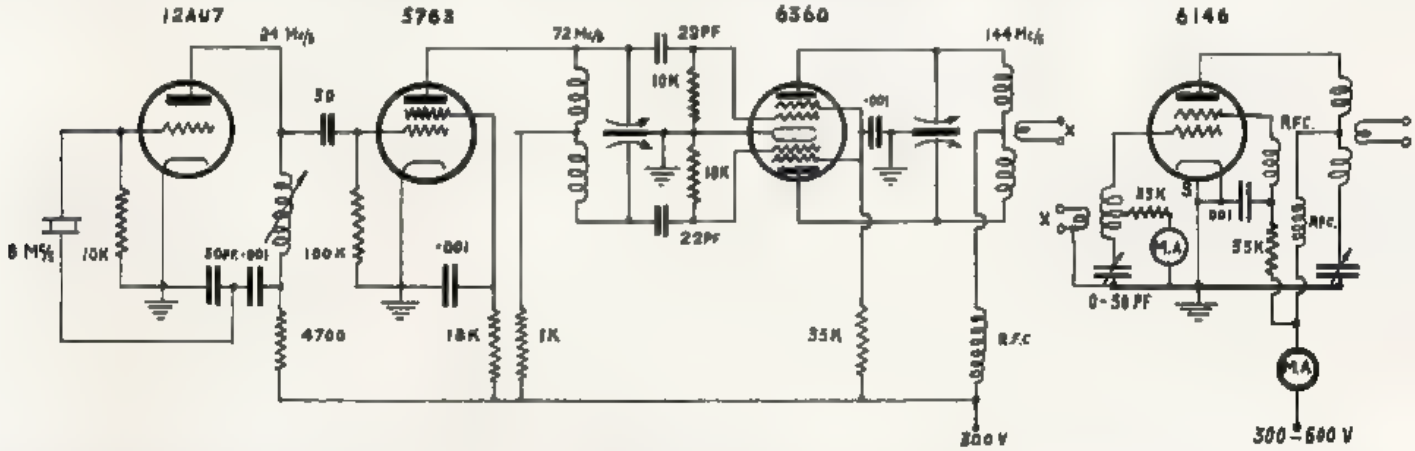
(Make sure the metal shield of the 6146 is earthed with a copper strip.)

The r.f. choke is a miniature heater choke from an I.F.F. unit. While this may not be ideal, it would be easy to wind a few turns of fine wire on an I.R.C. resistor.

A 3-turn aerial link was used and coupled in till the plate current was about 100 mA. As this amplifier depends on grid drive for bias, care must be taken to ensure the exciter is operating. With plate and grid meters installed, the writer considers that no trouble should be experienced.

[A suitable modulator design was described in August "A.R.," which, with a power supply, will provide an excellent 2 metre rig for the coming season.—Ed.]





* Written by an anonymous avid "A.R." Reader.

The WARBURTON FRANKI Page

DIFFUSED JUNCTION SILICON DIODES

	6F SERIES						
	6F5	6F10	6F15	6F20	6F30	6F40	6F50
P.I.V. (Volts)	50	100	150	200	300	400	500
R.M.S. Input (Volts)	35	70	105	140	210	280	350
	12F SERIES						
	12F5	12F10	12F15	12F20	12F30	12F40	12F50
P.I.V. (Volts)	50	100	150	200	300	400	500
R.M.S. Input (Volts)	35	70	105	140	210	280	350

WORLD-FAMOUS

INTERNATIONAL RECTIFIERS

COMMERCIAL TYPE SILICON DIODES

		2E4		5E4	
		Cap. Load	Res. Load	Cap. Load	Res. Load
Peak Inverse Voltage	Volts	400	400	400	400
Maximum R.M.S. Input Voltage	Volts	140	280	140	280
Max Rectified D.C. Output Current (at 70°C. ambient temp.)	mA.	200	300	350	500
Max. Surge Current (at 0.1 second)	Amps.	2	2	5	5
Max. D.C. Reverse Current at 100°C. (full cycle average over 10 sec.)	mA.	0.5	0.5	0.5	0.5
Max. D.C. Voltage Drop at 500 mA.	Volts	—	—	1.3	1.3
200 mA.	Volts	1.3	1.3	—	—

SEMICAP

TYPICAL CHARACTERISTICS:

Capacitance Range: 3 to 30 pF.
Frequency Range: 1 to 500 megacycles
Peak Signal plus Bias Voltage Range: 0.1 to 200 volts d.c.

ELECTRICAL SPECIFICATIONS:

Capacity: 6.8 pF. at —10 volts ±20%.
Maximum Peak Inverse Voltage: 200 volts d.c.

COMMERCIAL TYPE SILICON POWER DIODES

Int'l Type	R.M.S. Max. Volts	P.I.V. Max. Volts	Recom'd Max. R.M.S. Volts
25HB5	35	50	12
25HB10	70	100	24
25HB15	105	150	36
25HB20	140	200	48
25HB25	175	250	60
25HB30	210	300	72
25HB35	245	350	84
25HB40	280	400	96
25HB45	310	450	108
25HB50	350	500	120

★ WRITE OR PHONE FOR COMPLETE DETAILS ON ANY OF THE ABOVE

INDUSTRIAL SILICON POWER DIODES

Diode Types	SD-94	SD-95
Peak Inverse Voltage Volts	400	500
R.M.S. Input Voltage Volts	280	350
Continuous D.C. Voltage Volts	400	500
Rectified D.C. Output Current, at 50°C. Ambient mA.	550	550
Ditto, at 100°C. Ambient mA.	300	300
Max Surge Current (1 cycle) Amps.	10	10
Max. Operating Frequency Kc.	50	50

WARBURTON FRANKI

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QLD.—233 ELIZABETH ST., BRIS., 31-2081 • S.A.—204 FLINDERS ST., ADELAIDE—W 1711

R620

A 500V. 300 mA. Supply using Silicon Rectifiers

S. T. CLARK,* VK3ASC

AT the time of my original experiments I only had eight 1N1763's available and had to limit the a.c input to the bridge rectifier to 540 volts r.m.s. (the absolute maximum quoted by the manufacturers).

The overall efficiency worked out at 84%, a figure which is greatly in excess of that obtainable with selenium or thermionic rectifiers.

CONSTRUCTION

The power supply can be built on a chassis measuring 13½" x 4½" and at least two inches deep, or on the rear of a larger chassis which will accommodate the transmitter and modulator. [If the specified parts are used.—Ed.]

Mount the iron cored components as shown in Fig. 1, with the rectifiers on a tag strip of twenty-four lugs beneath CH1 and the electrolytics used for C2 and C3 on another tag strip beneath CH2. The bleeder can be mounted on the rear apron with the switches and pilot lights on the front. If a separate chassis is used a power connector will also be needed on the rear apron. This can be one of the several types available.

Of course, if you build the supply as part of a Table Topper, as is my intention, then the switches and pilots will be mounted on the front panel and the supply wired directly to the transmitter.

Be sure to observe the proper polarity of the rectifiers and electrolytics. The rectifiers are connected as shown diagrammatically in Fig. 1. They have a small symbol marked on them indicating the polarity.

In a power supply using a choke input filter, the unloaded d.c. voltage rises to the peak value of 1.42 times the r.m.s. input (i.e. 820 volts). By choosing the correct values for L1 and R1, this voltage can be controlled. In this case the d.c. output voltage is 570 volts with 30 mA. through the bleeder or 550 volts with 50 mA. The knee of the curve is quite sharp and the voltage drop is almost perfectly linear from the 50 mA. load point through to the "overload" check point of 400 mA., where the output voltage is still 460 volts.

The value of the bleeder resistor must be adjusted to take between 30 and 50 mA. unless it can be arranged that some of the low power stages which are not keyed or modulated are used as "bleeder". In this case then the resistors used for R1 could be very much higher in value than the 18,000 ohms for 30 mA., or 11,000 ohms for 50 mA. Four 100K ohm 2 watt resistors should be adequate for discharging the filter capacitors. The four resistors should be connected in series-parallel making a 100K ohm bleeder.

Taking the minimum tolerable bleeder current of 30 mA. as our "no load" condition, then the regulation figures are 6.6% for 70 mA. (100-30), 11.75% for 170 mA. (200-30), and 17.5% for 270 mA. (300-30). If the idling current is adjusted to 50 mA. or more, then the regulation figures will be slightly improved because the internal resistance of the supply is a constant 300 ohms after passing the 50 mA. load point.

Regulation could be further improved by only using one choke in the filter for the high power stages, however, it may then be necessary to increase the capacity of C2 above the 20 μF. used.

The condensers need only have a combined peak rating of 700 volts when the bleeder is adequate and suitable units of 50 and 100 μF. are available. If the larger units are used, be very careful to use adequate insulation on the cans.

POWER SWITCHING

Two double pole switches are shown, with one pole of S1 and S2 connected in parallel in the transformer primary, and the other poles connected in series in the h.t. output lead. This arrangement means that either switch may be used to switch the h.t. on and off and both switches must be off before the heater supply is disconnected

The switches used should be robust with long leakage paths. I suggest Bulgin 6 amp. type or similar. Ordinary toggle switches are not recommended as they are too liable to fail and 5 amp. a.c. light switches are not designed for this service.

A suitable alternative would be to use a Bulgin type on the a.c. side and a "microswitch" on the h.t. This switching arrangement permits using the filament windings to supply the tube heaters and 6-7 amps. can be drawn from these windings so long as the total h.t. drain is limited to 300 mA.

PILOT LAMPS

These are 240v. ¼ watt neons but a smaller size may be substituted if desired. The h.t. indicator (red) will need an additional dropping resistor R2, of about ¼ megohm to limit the current to a safe value.

PROTECTION

The circuit diagram of Fig. 1 shows only a 2 amp. fuse F1. The rectifier manufacturers warn against the likelihood of damage to silicon rectifiers from switching and keying transients. They state that these may be absorbed by capacitors, but I have been unable to obtain any recommended values as the only information I have suggests c.r.o. measurements to permit adjustment. C1 is included across the transformer secondary to help suppress transients. CH1 and 2 could be similarly treated also.

There appear to be a number of methods which are used in power supplies of this type, but there is no unanimity about the most effective methods and readers would do well to consider any technique which will protect a batch of silicon rectifiers from being damaged by transients.

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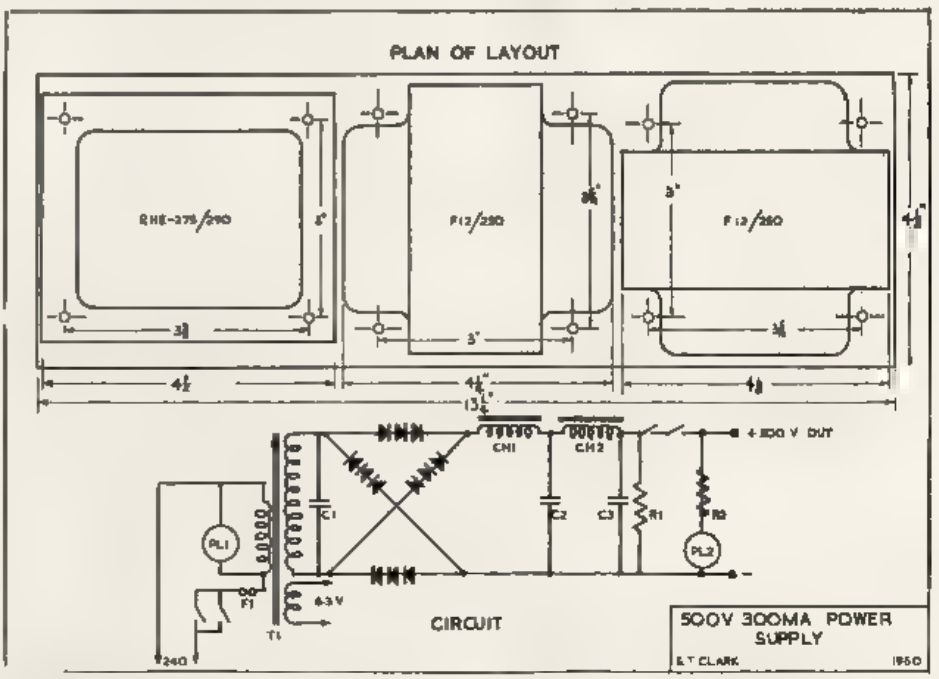
1. Radiotron Designer's Handbook.
2. Radiotronics, June and September, 1959.
3. "Miniwatt" Germanium and Silicon Transistors and Diodes. Fifth Edition.
4. A.R.R.L. Handbook.
5. Radio Handbook.



T1—Power transformer National RHE275/290.
CH1—Filter choke. National F12/250.
CH2—Filter choke. National F12/250.
R1—Bleeder resistor IRC FRWA24, 25K, 75w.
R2—PL2 dropper IRC type BT½ ½ meg., ½w.
PL1—240v. ½w. neon.
PL2—240v. ½w. neon.
C1—0.02 μF., mica or styroseal (1000v. a.c.).
C2—Four 20 μF. 600p.v. electrolytics.
C3—As C2.
Rectifiers—1N1763, OA210, or SD94A.
Two 24-terminal tag strips and sundry small hardware items.

* 60 Jensen Road, East Preston, Vic.

JAMBOREE-ON-THE-AIR

The Scout Jamboree-on-the-Air will be held from 1000 hours on 22nd October, to 1000 hours (E.A.S.T.), on 24th October, 1960. The following Victorian stations are taking part:—

VKs 3ADD Hamilton, 3ADV Skipton, 3WB Penshurst, 3II and 3AGD Dunkeld, keld, 3AKR Westmere, 3ABT Geelong, 3HG Coleraine, 3MC Coleraine, 3AKN Macarthur, 3ARJ Allansford, 3ADN Lismore, 3XN Hawksdale, 3JA Nullawarre, 3APS Casterton and 3XE Woolsthorpe.

The State Co-ordinator for this job is John 3AGD and his assistant is Lin 3ARL. John's address is "Wandobah," Dunkeld, telephone 134; and Lin's, 53 Alwyn St., Mitcham, telephone WU 3422.

Have you thought about a little display of your equipment for the visitors? Or to making up some simple little device, remembering perhaps that proximity senser?

★

PEDAL WIRELESS PIONEER PASSES ON

On 26th July there was a hush over the Centre as all transceivers and bases of the Flying Doctor network went off the air for two minutes in quiet tribute to Mr. M. B. (Morrie) Anderson (VK3AMA, ex-VK5MA) who died in the Heidelberg Hospital, Melbourne, on 22nd July.

Morrie Anderson, pioneer in his own right, was known up and down the tracks from Burketown to Birdsville, from Innamuncka to Broken Hill, from Camooweal to Millingimbi, and from Alice Springs to Coober Pedy. His friendly drawl from the Cloncurry and Alice Springs bases giving patient instruction to bush mothers struggling with a pedal set will never be forgotten.

"Morrie Anderson," said a cattleman, "symbolised the practical comradeship which has always been part of Flynn's team of workers. The whole inland is in mourning today for a great man."

His name is commemorated on a tablet in the Pioneers' Memorial Wall at the John Flynn Memorial Church at Alice Springs.

"A.I.M" Frontier News, August 1960.

★

DAFFY DEFINITIONS

A.M.—An old fashioned system of adding and substracting intelligence (?) to and from a carrier which really isn't needed in the first place

S.S.B.—An expensive method of getting all a.m. operators mad.

D.S.B.—A less expensive method of getting all a.m. and s.s.b. operators twice as mad.

C.W.—A still less expensive method of getting yourself mad.

(Courtesy Rags Review, Radio Amateurs of Greater Syracuse.)

Psycho schematic; a radio amateur following P.M.G. trunk line circuits.

LONG DISTANCE COMMUNICATION

The American space probe, "Pioneer V", designed to orbit between the sun and earth, a distance of fifty million miles, relies upon solar cells to power its transmitters.

Jodrell Bank (England's giant radio astronomy centre) was in control, being one of the few centres in the world capable of receiving messages from such a distance. Frequencies of 373 Mc. and approximately 960 Mc. being used for control. It would appear that 'Pioneer V' is now inoperative as radio messages are no longer being received from it. However, the space vehicle is itself still in orbit

"Working Mobile."

TRANSISTORISED CONVERTER FOR MOBILE WORK—THE EASY WAY

(Continued from Page 9)

use of dry cells is that it is unnecessary to make any power supply connections, either to the car receiver or to the car battery. This saves considerable time during installation and makes the unit readily adaptable to portable operation should the occasion arise.

The chassis used by the author was made from brass from an old AR7 coil box, which with very little effort can be made to look neat and tidy. Figs. 2 and 3 give an idea of the layout. No particular layout is required. No instability was experienced as a result of lead and component placement. Keep all leads as short as possible and mount all the parts securely to the chassis. This will prevent the leads from breaking as a result of the vibration which occurs in mobile operation.

Because of the small current and voltage requirements of the converter, it is not necessary to use standard hook-up wire in the circuit. No. 30 insulated wire is entirely adequate and results in a much more compact and neat-appearing finished product.

Only two external connections to the converter are necessary. A co-ax lead from the antenna must go to the input of the unit and an output co-ax connection to the input of the car radio is required.

When the unit is wired and ready for testing it will first be necessary to make certain that the oscillator is functioning. An easy method of determining this is to turn the converter on and listen to the home receiver for the signal from the oscillator. Tune the receiver to the oscillator crystal frequency and adjust the slug in L3 until the signal is heard. The oscillator will not oscillate until the collector tank C2-L3 is resonant. If the converter was built for operation on 20, 15 or 10 metres, it will be necessary to tune the home receiver to the third harmonic of the crystal frequency while making the above adjustments.

After the oscillator is known to be operating properly, install the unit in the car with the car radio tuned to the intermediate frequency of the converter and the converter turned on, adjust the slug in L3 for maximum background noise as heard on the car receiver. Next adjust the slug in L1 for maximum noise or select a weak signal and peak it up for maximum gain. After this adjustment is completed set the car radio for the centre of the i.f. frequency band to be used with the converter, adjust the slug in L5 for maximum gain. If only one segment of a particular band is going to be used additional gain can be realised by peaking the coils for that portion of the band. Example, peak the converter for 3,800 to 4,000 Kc. rather than 3,500 to 4,000 Kc. if 75 metre operation is contemplated and you are interested primarily in the phone band.

The converter built by the author has been in constant service for two years and the four penlite cells have only been replaced once in that time. Under normal circumstances they should last their normal shelf life. The measured current drain of the converter was 2.3 mA.

The sensitivity of the unit on the lower frequencies is comparable with that of a three-tube converter which was originally used in the writer's mobile installation. It does not compare as favourably with a vacuum-tube converter when used on 15 or 10 metres because no r.f. amplifier stage is incorporated. However, it proves to be adequate and an S6 signal or better is comfortable copy at these frequencies.

Changing to a transistorised converter was one of the most gratifying experiments I have undertaken and was well worth the effort. I am sure you will find the results equally satisfactory.

REFERENCES

Philips Transistor Circuitry, 1959.
"QST," September 1958.
Philips Transistor Circuitry, 1959.

FEEDBACK

There are some who regrettably consider that s.w.l's. are a pest and should not be encouraged. This is an unfair attitude because many Amateurs are s.w.l's. and it cannot be claimed that the same person is different when he calls CQ to when he signs an s.w.l. card. (Look through the Call Book and see how many Amateurs are s.w.l's.—you will also be surprised.) Today our aim should be an active W.I.A. and for this to continue we must have new members, and what better source of potential Amateurs than the current s.w.l. Everyone must commence in a hobby and it is very important we encourage people to join our ranks. Perhaps you have forgotten how you received a start in Amateur Radio, but did your tutor consider you a pest, because if he did, then would you have continued with your interest and become an Amateur? It is deplorable for any group to become split in its opinion regarding the desirability of having certain classes of interest within its ranks. Let every member welcome newcomers to our hobby, and endeavour to have them obtain their ticket, then we can be assured of the continuation of the W.I.A.

★

Hope all this moon-bounce publicity is not moon-shine

★

If Amateurs decided to assist the Country Fire Authority in every way possible they would be rendering a valuable community service, and by so doing may perhaps overcome the prejudice in some quarters regarding the desirability of a W.I.C.E.N. network. It is admitted that we already do help the C.F.A., but are we doing all we can? I know of one group who have realised that their local community "service" (?) is incapable of being used in a real emergency. It would be useless for the local authority to find out in an emergency that his stand-by network could not be used, and these Amateurs are to be congratulated in going ahead without waiting for officialdom to learn that their thoughts are not worth a 69 Gc/s. dipole. This is something to think about—could the Amateur Service obtain much needed emergency network practice, help an essential community service, and at the same time prove (if proof was needed) that Amateurs are professionals, all by increasing their C.F.A. activity?

★

Public Relations — Populated Bands — Progress — Publicity —

★

I wonder if the readers of "A.R." would reply to a questionnaire and state what they prefer to read in the magazine. This could help the Publications Committee (and make more work for the Editor. Ed.), but perhaps they had not thought of it. Why not write in and say what you prefer. It could save me having to write this column each month

73.
CASEY

TECH

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HV-20 HIGH VOLTAGE PROBE
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Sensitivity 20,000 ohm/V. DC
10,000 ohm/V. AC

Ranges.

0-5, 25, 100, 500, 1,000 volts AC.
0-5, 25, 100, 500, 1,000, 5,000 volts DC.
DC Current: 0-1 microamp., 0-5, 50, 500 mA.
Resistance, 0-60K, 600K, 0-6Mg., 60Mg. ohms.
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For max. efficiency the 10-metre coil is made of in. silver-plated strip, 15 and 20-metre coils of 1/8 in. silver-plated wire, and the 40 and 80-metre coils of 12 B. & S. tinned-copper wire.

Input capacity 250 pF. max., output capacity 1,500 pF. max. A single pole five-position switch is provided which can be used for switching in parallel capacities when required.

Recommended input capacitor Eddystone Type 817. Recommended output capacitor: Standard miniature 3-gang BC condenser which is suitable in this position up to 1 kw.

Price: £4/17/6 nett

"Willis" Med. Power Pi-Coupler, £3/19/6 inc. Sales Tax.

Geloso Pi-Coupler, 35/6 inc. S. Tax.

"Willis" Heavy Duty Pi-Coupler Choke, 25/- inc. S. Tax.

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UM2	60	120	200 mA.	5¼"	4¼"	5¼"	11 8	£10/13/3
UM3	120	240	250 mA.	5¼"	5¼"	5¼"	14 8	£12/2/6
UM4	250	500	400 mA.	10¼"	6¾"	8¾"	41 0	on application

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	11 metre band 26.96-28.0 Mc.	40 metre band— 7.0- 7.3 Mc.
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Tube Line-up—V.F.O.: 6CL6 and 5763. P.A.. 6146 Mod.: 12AX7, 12AU7, two 807s

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Rules of the Australian DX Century Club Award

1. The Australian DX Century Club Award is open to any Australian Amateur who has established two-way contact with one hundred or more countries in the world and complies with the following Rules

2. All contacts must have been made since the return of licenses after the 1939-45 War.

3. The official Countries List, as published annually and amended from time to time in the Federal Notes of "Amateur Radio" shall be used for the purpose of determining "countries".

4. All contacts shall be made with other Amateur stations operating in the authorised Amateur bands, or with stations licensed to contact Amateur stations.

5. Contacts made with ship or aircraft stations will not be allowed, but land mobile stations may be claimed provided the location at the time of contact is clearly shown on the confirmation.

6. Credit may only be claimed for stations using regular government assigned calls for the country concerned.

7. Stations of a portable nature which are using their own call sign followed by the prefix of the country in which they are operating may be credited under Rule 6 above, provided that the confirmation submitted indicates the particulars of such operation and the other requirements are in accordance with these Rules.

8. Each confirmation submitted must show the date of contact, type of emission, the report, the band and the location of the station.

9. Confirmations must be submitted exactly as received from the station contacted and altered or forged confirmations will be grounds for disqualification.

10. Out-of-band operation used to contact a station will result in disqualification and be retrospective in the case of members.

11. All stations must be contacted from the same Australian call area and by the same licensee, although if the call sign is subsequently changed, contacts will be allowed if still within original call area and by the original licensee.

12. Confirmations submitted which show both phone and c.w. reports may be accepted for both sections if the date of each contact is shown and emission is indicated

13 Should a country be deleted from the official countries list at any time, members and intending applicants will be credited with such country if the date of contact is before the date of such deletion.

14. Certificates will be issued for "All Phone", "All C.w." and "Open" contacts with a hundred countries and stickers will be subsequently issued for each additional twenty countries confirmed over the one hundred.

15. Successful applicants will be listed monthly in "Amateur Radio". Subsequent to the first application, members must submit additional confirmations of not less than five at any one time, for additional credit.

16. Applications for membership shall be addressed to the Awards Manager, G.P.O. Box 2611W, Melbourne, and accompanied by sufficient postage for return of confirmations to the applicant, registration being included if desired. Confirmations must also be accompanied by a list of claimed countries and stations, showing relevant details or explanations where necessary.

17. The decision of the Awards Manager in the interpretation and application of these Rules shall be final and binding.

18. Notwithstanding anything to the contrary in these Rules, Federal Council of the Wireless Institute of Australia reserves the right to vary or alter them when necessary.

D.X.C.C. AWARDS AS AT 1/9/60

PHONE

Call	Cer. No.	C'tries	Call	Cer. No.	C'tries
VK6RU	2	247	VK3TE	37	115
VK6MK	43	241	VK4JP	8	114
VK5AB	45	232	VK7LZ	36	111
VK4FJ	21	219	VK5HW	38	111
VK3WL	14	211	VK5MS	24	109
VK3ATN	26	204	VK4CB	28	109
VK6KW	4	199	VK3WM	29	109
VK4HR	12	192	VK4EL	44	108
VK3BZ	3	176	VK7RX	32	107
VK4RW	23	164	VK4NC	35	105
VK3EE	10	163	VK9AU	40	104
VK9DB	31	161	VK3HO	25	103
VK4WF	16	160	VK2VV	46	103
VK3JD	1	155	VK2ADT	13	102
VK4KS	9	152	VK2AHA	15	102
VK3LN	11	141	VK6PJ	19	101
VK3JE	7	140	VK5CE	34	101
VK4DO	20	139	VK3TG	48	101
VK6DD	6	126	VK3IG	5	100
VK5XN	42	126	VK3GG	18	100
VK4RT	22	124	VK5LC	27	100
VK4WJ	17	122	VK3AUP	30	100
VK3ACN	39	120	VK3VQ	33	100
VK2AHH	41	120	VK2AJO	47	100

C.W.

Call	Cer. No.	C'tries	Call	Cer. No.	C'tries
VK3KB	10	280	VK3XO	43	144
VK3CX	26	267	VK5JT	54	144
VK4FJ	29	262	VK3VW	4	143
VK3NC	19	236	VK2QL	5	142
VK3FH	15	226	VK4SD	52	140
VK3BZ	6	222	VK3XK	30	138
VK4HR	8	218	VK3DQ	61	136
VK3XU	48	213	VK3ZO	65	136
VK6RU	18	209	VK5FN	31	134
VK3YL	39	203	VK3JI	25	131
VK5BY	45	202	VK2XU	64	129
VK2EO	2	191	VK3RJ	42	128
VK5RX	23	190	VK3RP	56	126
VK4DO	20	176	VK4RF	11	125
VK4EL	9	175	VK3HT	37	124
VK5BO	33	171	VK3YD	27	123
VK3CN	1	163	VK3EK	3	122
VK7LZ	17	162	VK3UM	12	120
VK4RW	47	155	VK3PL	38	117
VK9XK	41	154	VK2OY	44	115
VK2GW	16	151	VK7LJ	24	114
VK6SA	28	150	VK6KW	40	114
VK3JE	21	148	VK4DA	7	113
VK4QL	36	146	VK2OI	49	108

C.W. (Continued)

Call	Cer. No.	C'tries	Call	Cer. No.	C'tries
VK5KU	63	108	VK4SS	53	103
VK4RC	13	107	VK3PG	46	102
VK2AHH	62	107	VK2AIR	60	102
VK2AEZ	35	105	VK2OA	32	101
VK7CH	55	105	VK3APA	14	101
VK3ARV	59	105	VK3ZA	57	101
VK3AHH	51	104	VK2OW	58	101
VK3ARX	66	104	VK7RK	22	100
VK5BS	67	104	VK3AHM	50	100
VK2YC	34	103			

OPEN

Call	Cer. No.	C'tries	Call	Cer. No.	C'tries
VK2ACX	6	282	VK3VQ	46	127
VK4FJ	32	265	VK2AHM	20	125
VK6RU	8	263	VK3PG	47	124
VK6MK	74	245	VK3YS	57	121
VK3NC	77	238	VK3AHO	76	119
VK4HR	7	233	VK5LC	55	118
VK3BZ	4	231	VK4CC	62	117
VK3HG	3	225	VK3HL	75	117
VK3WL	45	225	VK2ASW	53	116
VK3XU	61	221	VK5NO	78	116
VK6KW	13	214	VK6PJ	44	115
VK3JE	12	210	VK3JA	43	114
VK3ATN	69	210	VK2ADT	14	113
VK7LZ	23	201	VK7RX	60	112
VK4DO	15	196	VK3HO	38	111
VK2NS	16	195	VK3MM	49	111
VK4RW	52	191	VK4RC	21	110
VK9DB	59	182	VK3ZB	34	110
VK4EL	10	175	VK2ZC	25	108
VK2DI	2	170	VK3KR	56	107
VK3KX	1	167	VK3AHH	64	107
VK4KS	24	167	VK3ARV	68	107
VK4WF	40	165	VK2YL	11	106
VK9XK	54	156	VK3AWN	36	105
VK3DQ	71	152	VK6WT	58	105
VK2AHH	73	151	VK2VN	18	104
VK5JT	63	150	VK4UL	27	104
VK9GW	48	148	VK6PW	50	104
VK2XU	79	146	VK3ATR	72	104
VK3LN	29	144	VK2HZ	17	103
VK5FL	26	143	VK7KB	30	103
VK3HT	41	141	VK2TI	37	103
VK3MC	5	139	VK3ZA	65	103
VK3OP	19	137	VK7RK	31	102
VK6DX	42	137	VK4TY	35	102
VK6DD	22	136	VK2AFA	70	102
VK2ADE	28	133	VK5HI	51	101
VK3JI	33	131	VK2TG	39	100
VK4BG	66	130	VK1EG	67	100
VK2AHA	9	128			

The political framework of the world is constantly subject to change and in this regard 1960 will always be remembered. A brief examination of the Countries List in use a few years ago reveals how unrealistic it would appear if still in use today. It has been suggested that political considerations be removed from our thinking and instead we settle for some form of geometrical division of the earth's surface into zones. "W.A.Z.," sponsored by "CQ" magazine provides 40 Zones following country boundaries in part, otherwise across stretches of ocean and not conforming to any particular size or pattern There is no particular merit in any such sub-division as far as countries are concerned. Another proposal has been to divide the map draught board fashion but DX'ers (and

Award Managers) would be faced with the impracticable task of plotting DX contacts.

The above infers that listings are influenced by the form of Government of the place concerned. Irrespective of its size, location or population, consideration is given to the listing of any place from which there is or has been Amateur activity and geography is, therefore, the second criterion.

Briefly, the main considerations for separate listing as a "country" are:

1. Political-administrative independence, and/or
2. Geographical separation (225 miles by water, excepting natural island groupings or 75 miles by land).

The list has been compiled on these lines, for the most part; however, the main requirement is that we have a common list, interesting and informative in itself, for all comers to follow.

A new and attractive Australian DXCC Certificate is being prepared by F.E. and all DX'ers are urged to work for and obtain this Award plus stickers for every additional 20 confirmations credited.

Details of countries which have been deleted from the current list from time to time, for which credit may still be obtained vide Rule 13, and all other relevant information will be embodied in future W.I.A. Countries Lists. **The first complete list will be published in January, 1961, issue of "A.R."** ●

A. KISSICK, VK3KB,
Awards Manager,
1 Macfarland St., Brunswick, Vic.

CONTESTS

VK/ZL DX CONTEST

The Federal Contest Committee of the Wireless Institute of Australia appeals to all VK Amateurs to make an extra BIG effort to enter enthusiastically in the VK/ZL DX Contest during the first two week-ends in October

Among the logs received on last year's Contest were a number of complaints on the conspicuous absence of VK stations to be heard. One remarked that he didn't hear any VK1 stations, and promised a real pile-up of answers to any who called.

"CQ" WORLD WIDE DX CONTEST

The phone section of this Contest commences at 0200GMT on October 29 and run to 0200 GMT on October 31.

The c.w. section starts at 0200 GMT on November 26 and concludes at 0200 GMT on November 28.

AMATEUR RADIO EXHIBITION AT GEELONG, VIC.

AN exhibition of Amateur Radio equipment was held by the Geelong Amateur Radio Club on 9th and 10th September, 1960. The purpose of this exhibition was to acquaint the public with all phases of Amateur Radio as practiced by licensed Amateurs and S.w.l's. in Geelong, and to give the more technically minded the opportunity to meet together to discuss their mutual interests.

The Exhibition was officially opened on Friday evening at 8 p.m. by the Minister for Shipping and Transport, Mr. Hubert Opperman, M.H.R. Following the opening, Mr. Opperman presented the G.A.R.C. Perpetual Trophy to the winner of the competition for the best piece of home-constructed equipment (VK3ABT).

This competition, which is to become a regular feature of the Club, has been inaugurated to encourage members to build their own gear. The judges were Messrs. E. Kosseck, VK3AKE; J. Mathews, VK3SY; A. Bell, VK3ABE, to whom the Club extends its thanks for the conscientious manner in which this rather difficult task was carried out.

The range of home-constructed equipment on display, the greater part of which was not in the competition, was very comprehensive and included such items as an a.t.v. transmitter, a flying spot scanner and a 1 to 1 converter (1 metre to channel 1); a 24 inch t.v. receiver and a 5 inch receiver built from "disposals" parts.

The a.t.v. equipment operated on 288 Mc. For 1,296 Mc. operation, there was a complete station including the large parabolic antenna. For the lower bands, a 60 watt transmitter, using a Geloso v.f.o. and 6146 p.a.; also a s.s.b. generator. Test equipment was represented by the inevitable but very useful g.d.o., c.r.o. monitors, audio oscillators, etc. The mobile display included crystal controlled transmitters, modified Command receivers, a field strength meter, d.f. loops and whip antennae.

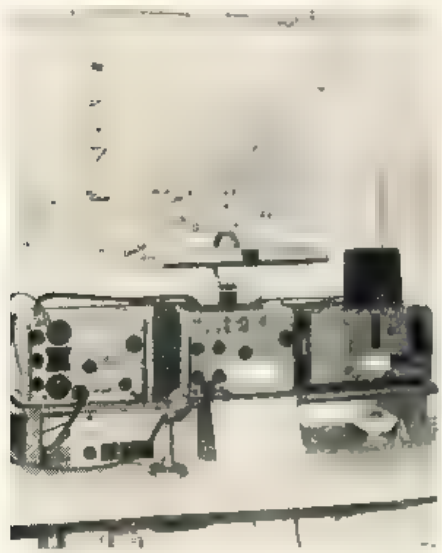
A number of commercial firms were invited to exhibit Amateur equipment currently available, and of interest were various Heathkit items from Warburton Franki, a s.s.b. generator from the Amateur Radio Service, Albury; A. & R. Transformers and Zephyr Microphones from Mr. A. J. Forster, of Brownbill's Amplifier Service; and an experimental projection t.v. receiver, with an imported German model alongside for comparison, from Mr. Davies, Geelong.

"On the air" demonstrations of Amateur Stations operating were given by VK3ABK and VK3ZAV on 144 Mc.; VK3ABT on 3.5 and 7 Mc.; with VK3ANG and VK3ATL working some real DX on the international bands.

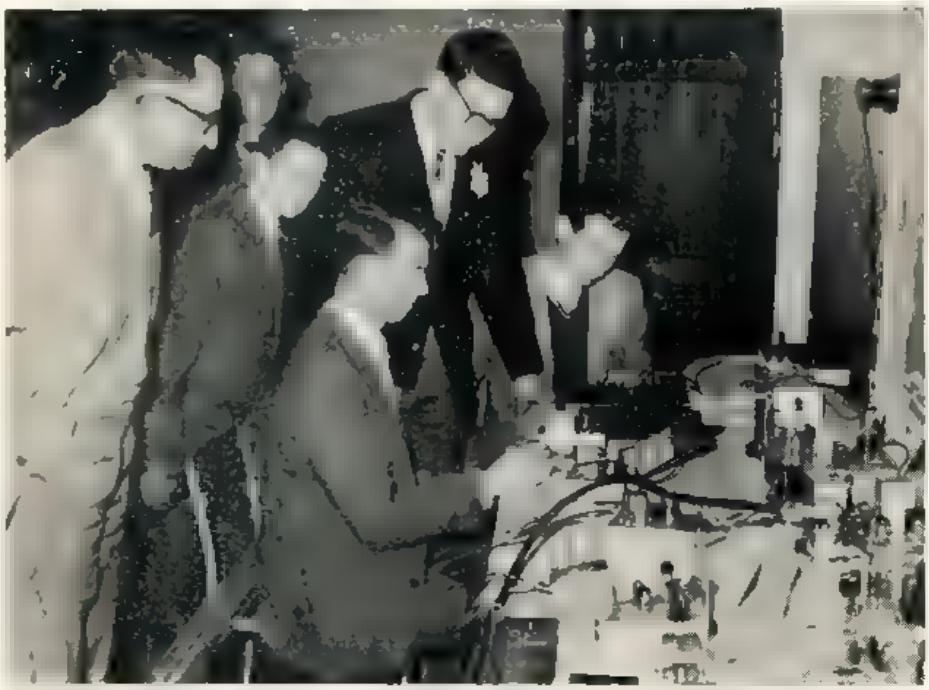
The South Western Zone W.I.C.E.N. group was active and stations which porvided loud clear signals for the benefit of an interested group of listeners were VK3IC/Mobile, Geelong; VK3AKN, Broadwater; VK3XE, Hexham; VK3ARJ, Wangoom; VK3AGD, Dunkeld; VK3AMS, Drysdale; VK3ADN, Lismore. (Thanks chaps for your co-operation after an unavoidably long delay in commencing the net.)

Club members appreciated the interest shown in the Exhibition by the Wireless Institute of Australia, which was represented on the Federal level by Bob Boase, VK3NI, and for VK3 Division by Michael Owen, VK3ZEO (State Secretary) and Keith Roget, VK3YQ (State Treasurer).

Some of the home-constructed gear at the Exhibition. On the right is a parabolic antenna for the 1296 Mc. equipment (mounted behind the antenna).



The W.I.C.E.N. Base Station of the South Western Zone, Victorian Division, W.I.A.



Dick Heighway, VK3ABK, demonstrating a piece of v.h.f. equipment to Club President, Harry Michael (black coat) and Club member Ron Cook (sitting down on right of photo), with interested spectators on the left of the photograph.

DISPOSAL BARGAINS

CRYSTALS

ALL £1 EACH. THIS MONTH ONLY.

Type	Kc.	Type	Kc.	Type	Kc.
DC	1985	DC	2096.25	DC	2338.05
DC	2007.5	AWA	2103.1	DC	2368
FT	2070	FT	2260	AWA	2442.5
FT	2075	DC	2336.4	DC	2595
	2085	DC	2338	DC	2665
		DC	2338		
AWA	3030	DC	3332.5	DC	3488.5
DC	3055	FT	3340	AWA	3545
FT	3184	L	3432.5	FT	3500
FT	3195	DC	3440	DC	3536
DC	3266.25	AWA	3450	L	3600
DC	3287.5	L	3460.5	FT	3850
DC	3313.5	L	3467.5	FT	3840
L	3320			FT	3885
FT	4025	FT	4445	L	4742.5
FT	4035	FT	4490	L	4750
FT	4080	DC	4495	FT	4765
L	4096	FT	4495	FT	4780
FT	4124	FT	4520	FT	4815
FT	4240	FT	4540	FT	4840
FT	4255	DC	4549.44	FT	4852.5
FT	4280	FT	4550	L	4870
L	4285	FT	4620	FT	4880
FT	4295	DC	4660	FT	4895
FT	4360	FT	4672.76	FT	4930
L	4396.7	FT	4676.11	FT	4950
FT	4397.5	FT	4735	FT	4965
FT	4397.5			FT	4995
AWA	5161.6	FT	5437.5	FT	5744
DC	5170	FT	5480	DC	5770
FT	5180	DC	5515	FT	5773
FT	5205	DC	5530	FT	5775
DC	5210	FT	5535	FT	5780
FT	5245	L	5551.5	FT	5782.5
AWA	5280	FT	5552.5	DC	5810
DC	5285	DC	5590	FT	5815
FT	5295	FT	5635	DC	5840
FT	5327.5	FT	5660	FT	5850
FT	5360	FT	5665	FT	5855
FT	5365	DC	5700	L	5897.5
FT	5397	FT	5706	FT	5910
DC	5410	DC	5710	L	5910
FT	5410	DC	5710	FT	5920
FT	5435	FT	5725	DC	5950
		FT	5740		

Type	Kc.	Type	Kc.	Type	Kc.
DC	6032	DC	6350	LP	6547
LP	6040	FT	6350	DC	6550
FT	6106.66	LP	6350	DC	6561
LP	6110	FT	6373.33	DC	6572
FT	6125	FT	6375	DC	6572
LP	6130	FT	6400.000	LP	6583
FT	6173.33	FT	6406.607	LP	6640
FT	6175	DC	6420	DC	6650
LP	6187	DC	6423	FT	6650
LP	6210	FT	6440	DC	6700
FT	6225	DC	6450	LP	6700
FT	6235	DC	6450	DC	6750
LP	6235	LP	6450	DC	6783
DC	6240	LP	6470	FT	6900
DC	6243	FT	6473.333	LP	6910
LP	6243	LP	6480	LP	6910
LP	6317	FT	6506.607	LP	6940
FT	6333.3	LP	6522	FT	6960
		LP	6525		
LP	7010	DC	7270	FT	7750
LP	7060	LP	7270	DC	7810
DC	7062	FT	7275	DC	7890
FT	7077	FT	7375	LP	7890
DC	7120	FT	7425	DC	7920
LP	7120	LP	7450	DC	7925
LP	7130	FT	7611	DC	7925
DC	7200	DC	7660	DC	7930
FT	7200	DC	7700	LP	7930
LP	7250			DC	7997
LP	8060	DC	8176	FT	8353
DC	8126	DC	8182	DC	8392
LP	8155	LP	8195	DC	8440
DC	8161	FT	8270	DC	8630
LP	8171	DC	8284	DC	8751
		DC	8350		

OTHER FREQUENCY XTALS

DC Type—2898.75 Kc. **£2/10/0**
FT Type—3.5 Mc. min. . **£2/10/0**
FT Type—4440 Kc. . . . **£2/10/0**
FT Type—4095 Kc. **£2/10/0**
DC Type—5 Mc. **£2**
FT Type—5.5 Mc. **£2/10/0**
FT Type—6 Mc. **£2**

AT5 TRANSMITTERS

As new, with valves and dust covers. **Bargain, £7/10/0.**

USE 1625s IN CLASS B

Valve type 1625, **5/- ea.; or 5 for £1.** Ideal for use in Class B Zero Bias Modulators. See article August "A.R." p. 3.

POWER TRANSFORMERS

385 volts aside, 100 mA, 6.3v. at 3 a., 5v. at 3a. Brand new. **45/-.**
410 volts aside, 80 mA., 12.8v. at 1.25a., 5v. at 2a. **40/-.**

VALVE SPECIALS

DL75 sub min. power output pentode, primarily intended for hearing aid. Fil. volts 1.25 at 25 mA., h.t. volts 90 volts **3 for £1, 7/6 each.**
EC79/6K4 u.h.f. osc. triode, 8-pin min. **3 for £1, 7/6 each.**
EF70 sharp cut-off r.f. pentode, 8-pin min. **3 for £1, 7/6 each.**
EF72 r.f. pentode, 8-pin min **3 for £1, 7/6 each.**
EF73 remote cut-off pentode, 8-pin min. **3 for £1, 7/6 each.**
EC91/6AQ4 g.g. triode, freq. limit 250 Mc., 9-pin min. . **10/- each.**
832A valves, new in carton Few only available **19/6 each.**

VALVE SOCKETS

Octal valve sockets . **6 1/6 each.**
English 8-pin min. sockets **1/6 each.**
Loctal valve sockets **1/- each**
Acorn valve sockets, ceramic **3/- each**
Min. 7-pin valve sockets, **9d. each, or 8/- a dozen.**
Ceramic 5-pin 807 valve sockets, **3/6**
EF50 valve sockets **3/6**

PLUGS, CABLES, DRIVES

AT5/AR8 Cables, 10 ft. long **10/-**
Command Receiver **Flexible Drives**, 12 ft. long **10/-**
Octal Plugs, with dust cover **1/- each.**

FUSES AND FUSE HOLDERS

Twin Cartridge Auto Fuse Holders, enclosed, bakelite case . . **2/6 each**
Fuses, Auto, all types ... . **5 for 2/-**
Fuse Holders, round type **3/6** each

VARIABLE CONDENSERS

120 pF. ceramic, ¼ inch shaft, **10/-**
Three-gang (R1155 type), ceramic insulation **17/6**
Four-gang, 150 pF. per section, ceramic insulation **15/-**
Two-gang, broadcast, ceramic **12/6**
Single-gang, 0.0005, ceramic **7/6**

MIN. VARIABLE CONDENSERS

Screwdriver adjustment, silver plated. Sizes available: 25, 55, and 80 pF. **7/6 each or Three for £1.**

SWITCHES

Switches, d.p.s.t. toggle, SCR536 type, **5/- each, or 5 for 20/-**
Switches, s.p.s.t. toggle, new . **3/6**

STEP-DOWN TRANSFORMERS

230 volt to 110 volt, 1kv. **£8/10/0**

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CORRESPONDENCE

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publishers.

AMATEUR T.V.

Editor "A.R.," Dear Sir,

I found it rather hard to get at the real point of a recent letter from VK2AWW/T and I was at first inclined to write to Dennis personally, feeling that his equally spirited letter was due mainly to a misunderstanding of my remarks. However, a public hearing has been opened and the accused subpoena'd, leaving me no choice.

Although my existence has, until now, been unknown to our VK2 friend, word of his activities and those of a few others has filtered through, although complete details are lacking. I can assure him that I have read all earlier issues of "A.R." since 1948 and any mention of a.t.v. has been noted. As I am in almost daily contact with Bill VK3BU/T, approximately 2 miles distant in the same city, I feel that this can be regarded as being in contact with Dennis and his immediate associates.

I might add that I have had an active interest in the possibilities of a.t.v. since 1950, when I was connected with the then unborn Australian television industry. For several years now I have been preparing for the day when consistent a.t.v. communication becomes possible. I realise the present difficulty of making on-the-a.r contact when distance is a factor, and any implication that I was not in favour of closed circuit activities could hardly be justified, since this has been my own method of approach. This is where "A.R." comes in as a communication channel making it possible to keep in touch with activity, both local and interstate.

A proposed constructional article on a flying spot scanner, using electrostatic deflection and focus, is being considered here, and several others who have built magnetically operated systems have been approached to do likewise. My letter in July "A.R." has brought forth correspondence asking for this very information.

The question of standards is one which is partly answered by the P.M.G's. Department, but any project should be planned to include future adaptation to possible expansion of activity. In this regard I have followed the lead of Eric VK5EC/T, as indicated in my July letter, and I see no argument with this.

I was pleased to see printed in September "A.R." a letter from Geoff VK3AUX/T describing his equipment, and I hope that this example will be followed by a large percentage of the 136 suffix T calls listed in the latest Call Book.

—Richard J. Heighway, VK3ABK/T.

CARTOONS

Editor "A.R.," Dear Sir,

Ref. the item in "A.R." for Sept. on p.32 at bottom right hand corner headed "Cartoons," we (that includes the rest of the family) are all for a page of the best. I hope those of Jeeves on the DX page of "QST" will be included.

We also enjoy the ones by Lindsay VK3ZEW. The trade mark being the "Moggy" and the remains of a fish. It is surprising the places these two turn up, particularly up on a beam! The one in the July issue could make a good advert. for Minties, wonder what VK3XF has to say about it?

Glad to see a Sideband column, one of these days I will be playing with it. If I get a full ticket, I will use s.s.b. exclusively on h.f. band and try to on v.h.f. Keep up the good work on "A.R."

—John M. Withers, VK3ZCO.

S METER CIRCUIT

Editor "A.R." Dear Sir

Congratulations on the excellent S meter circuit published last month. It's very fine having a meter that swings full scale with a strong signal, instead of half-heartedly dropping backwards.

One comment is that a pot. is unnecessary as cathode resistor (R4); fitting one on a receiver could present difficulties. Once the right value is found, adjustment is not needed, as the meter cannot move too far across—that's one of the beauties of the circuit.

I spent about three hours trying to make a 0-10 mA. meter work. Substituting an 0-1 mA. meter made everything right in about three minutes. The article blithely says "The resistor network is simply adapted to accommodate whatever meter may be available"; don't you believe it.

If the meter is drawing 10 mils., then the tube needs to draw a lot more to deflect the meter to 0; then a.v.c. has to cut the tube off till 10 mA. flows again in the meter; some a.v.c.! If you must use a 10 mA. meter, run the B plus of an I.f. amp. tube through it, and a reasonable deflection will be seen when a.v.c. biases the tube.

Another objection to burning 10 mils. through an S meter is the heat that must appear somewhere. Four parallel one-watt resistors overheated in a few minutes.

—Rev. Bro. D. L. Kinsella, VK2AXK.

ABOLITION OF C.W.

Editor "A.R.," Dear Sir,

Congratulations on the long-awaited feature on Sideband and full marks to Bud Pounsett for getting on with the job in such a practical down-to-earth and friendly manner. If this induces more to join the sideband ranks it will have achieved its purpose and I'm quite convinced this will be done.

As I see it (in a brief six months of exclusive sideband operation) two major problems face us in getting more to the sideband ranks. The first is to kill the feeling that sideband is complicated. For the technically minded simple and effective transmitters can be built and for the non-technical (and I must admit to falling into this category) there's commercial equipment readily obtainable now that import restrictions have been lifted.

The second problem—and this is a real one—is to get more frequencies for sideband operation. 14 Mc. seems to be by far the most popular, yet all are concentrated in the top 75 Kc. of the band. There's much W-land QRM. S.s.b. must use more and more of lower frequencies as raised so well by Pounsett in July issue of "A.R."

Many theories have been submitted for band re-allocation. May I submit this one. 14,000-14,040 c.w., 14,040-14,140 a.m. phone, 14,140-14,200 s.s.b.

C.w. as a form of communication is outmoded and no longer necessary (I see no useful reason what-so-ever for its inclusion in the A.O.C.P. examination), but my suggestion gives these chaps 40 Kc. for the time being. After a limited period, say six months, if the majority agree, we could hand this over to a.m., giving this form of communication the bottom 100 Kc. and s.s.b. the next 100 Kc., i.e. 14,000-14,100 a.m., 14,100-14,200 s.s.b.

Here's to the abolition of c.w. at least on the DX bands and the ridding of our ranks of these strange chaps who sacrifice all (including in most cases their families) for that one country, the majority of which are uninhabited.

—Roth Jones, VK3BG.

DIATHERMY INTERFERENCE

Editor "A.R.," Dear Sir,

Monitoring the high frequency bands over the past months I have noted an alarming degree of spurious radiation from so-called diathermy machines operated by members of the medical profession.

Examination of a number of these installations shows that in every instance the equipment is of a most elementary type comprising a self oscillator supplied with raw a.c. plate power and possessing no means of effective frequency stabilization.

Complete lack of screening or line filters allows these machines to radiate from electrodes and power mains to a degree that such signals have been detected over wide areas.

Genuine diathermy machines operated by skilled practitioners in screened rooms, possess negligible radiating power. However, the type of unit sold to medical practitioners operates with electrodes in the form of flat spirals or helices, according to the portion of the patient's body being treated. They possess negligible electrostatic field penetration, and as the assignee of several world wide patents on inductive and dielectric heating equipment, I can say without fear of contradiction that their deep heating claims are as spurious as the widespread interference they so readily radiate.

Apparently these machines were deliberately designed to have negligible deep heating penetration, and so, cause more harm to the pocket book than the hide of the patient when used by medical men entirely lacking in electronic therapeutic knowledge.

Questioning one medical practitioner operating such a machine as to the frequency employed, he looked at the metal name tag and seriously informed me, "It says 50 cycles". On measurement I found that the oscillator of this particular machine worked on 14.8 Mc. with a field capable of being detected on an absorbtion meter in the street beneath the incoming power mains.

Other machines in the Northbridge area wobble about between 16 and 18 Mc. with abominable "T1" notes having strong harmonics up to 100 Mc., and some right on Channel 2 T.V. Seeking the co-operation of a very bad offender, suggesting housing of the equipment in a screened room, I was informed "It wouldn't be worth it." It would appear from this, that the profit motive and not the patient is the main concern.

Just imagine what would happen if an Amateur station owner attempted operation with a highly unstable oscillator fed with raw a.c. to the plate, and no regard to whatever frequency it might be radiating on.

During the War, medical practitioners were not allowed to use diathermy equipment unless it was operated within a screened room capable of negligible external radiation.

Automobile ignition interference and that from pilot arc welders sorely need effective attention. Motor car and welding machine manufacturers would be put to the expense of a few pounds per unit to cure this.

Having literally and figuratively poured approximately £3,000 "down the drain" in an ineffective intervention at the Geneva Conference, it is high time that the Wireless Institute of Australia sought competent legal advice with regard to the hamstringing forest of regulations cluttering the operation of their members' stations.

I for one would gladly give my donation to such a fund.

—J. G. Reed, VK3JR.

A NEW CERTIFICATE

Editor "A.R.," Dear Sir,

The recently formed Elizabeth Amateur Radio Club is issuing a Certificate known as "The Elizabethan Award" to any Amateur who has worked a number of stations situated in Elizabeth. The Certificate, attractively printed black on white, is signed by the Elizabeth Amateurs who are listed in the application.

1. Amateurs who reside in the VK Areas 1 to 8 inclusive require eight (8) contacts.
2. Overseas Amateurs require six (6) contacts.
3. Any QSO on 80 Mc. or above counts as two contacts.
4. Any QSO with the official club station (the call sign of which has not yet been allocated) will count as two contacts.
5. S.W.L.s Listeners may apply, but must include the call of the station being worked by the Elizabeth Amateurs. (Calling CQ will not suffice.)
6. Applications may be made giving log details (date, time, band, etc.). QSL cards not required. They should be sent to the Hon. Secretary at 142 Woodford Road, Elizabeth North, South Aus., and enclose a 5d. stamp (Overseas applications should send two International Reply Coupons).
7. All QSOs must be after 1st January, 1960.

Some of the Calls from Elizabeth are: VK5 5BP, 5BS, 5DY, 5EU, 5EJ, 5EV, 5FY, 5HA, 5KD, 5NO, 5NQ, 5PE, 5PF, 5QX, 5ZJM, 5TM.

—Ron A. Catmur, VK5FY, Hon. Sec.

VISITING AMATEURS

Editor "A.R.," Dear Sir,

On several recent interstate visits some difficulty was experienced in contacting Amateur friends in other cities, due mainly to lack of local knowledge, and secondly, due to some of these friends not being on the air whilst I was in their area.

The above brings forward the thought of Interstate contact points for visiting Amateurs.

Further to this, what I had in mind is a phone number or numbers in each capital city, this number to be registered with all other Divisions of the W.I.A., so that if an Amateur were to get in touch with his local Division of the W.I.A., he could then receive the appropriate number or numbers. So that when he arrived in Brisbane, Sydney or Perth, etc., and wanted to meet Amateurs, he could contact the above number and make suitable arrangements.

Extending this idea further, if one were to go touring (without visiting a capital city) the road maps, as issued by the N.R.M.A., R.A.C.Q. or R.A.C.V., etc., could be obtained on behalf of the member, by the appropriate Division of the W.I.A. and suitable notations made beside the towns along the route, indicating what Amateurs are in each town. Of course, one could go further and indicate which Amateurs are available for night time visits and which are available for day time visits, or inversely, who might or might not welcome visitors during working hours. The latter might complicate the scheme a little in that each member would have to indicate his desires in this matter.

It is envisaged that the foregoing or a variation of the scheme would be Australian wide.

(Continued on Page 34)

S W L

Maurice Cox, WIA-L3055
Flat 1 37 Boyd Crescent,
Olympic Village, Heidelberg,
N.23, Victoria.

It's me again. Hi there gang, how's everyone this month? Have you plenty of DX to report?

Well the R.D. Contest is over for another twelve months and by the time you read these notes we will be into the VK-ZL Contest. I wish you all the best of luck from the VK3 gang.

Seven of us went down to Rye for the R.D. Contest and only for the high noise level, we all had a mighty time. The noise was so bad that we gave it away, packed up and went home by 1600 hours. We hope to repeat these get-togethers in the coming years, even if we don't score well, we get to know each other very well. The scoring wasn't too high, 648 points and the highest and that was me. The main thing, we had a good time.

On Friday, 26th Aug., we of VK3 held our Annual General Elections and here as follows are the new office-bearers: Mac Hilliard L3074, President, Ian Thomas, L3065, and Mike Ide, L3015, Vice-Presidents; M. Cox, L3055, Secretary, Asst Secretary, T. Hayward, L3072, Minute Secretary, Ian Thomas, L3065, and the organising Committee is made up of Messrs. Hilliard, Cox, Woodman, Young, Hayward and Ide.

Sometime in February of next year, 1961, it is hoped that the VK3 Group will hold a S.w.l. Convention at Shepparton. Would all those interested please contact me so as we could have a fair idea how many of us will be there. More about this Convention in future issues.

The Oceana Contest was won by a VK4 S.w.l'er, Charles H. Thorpe, of 81 Dawson Road, Rockhampton, Qld. He scored 50 points. Congratulations Charles, a very fine effort when as you say and I agree, band conditions were very poor indeed. Second was Don Grantley, L3065, who scored 28 points, and third placing went to Eric Treblicock and myself, both scoring 16 points each. These were the only four logs received, rather disappointing, don't you think chaps. Going by the grapevine, there were a lot of logs in the R.D. Contest, but you can't enter a simple one like the Oceana Contest. What's the matter, was it too hard for you all? If it was, all I can say is that some of you are short wave listeners. Let's hope that next time we run a contest that the committee receive more logs. Don't forget we run these contests for you supposedly short wave listeners.

As I mentioned last month, I am still waiting for some letters from country members, so far none to date. Also a photo of yourselves and rig for this page. I hope to be able to put one in for the November issue. So drop me a letter with your photo chaps.

I would like to see more members attend the VK3 Group meetings, because the organising committee has a lot of good ideas that are going to benefit you all.

VICTORIA

As you already know, we had our election of office-bearers at the last meeting. Eighteen members were present, which was a sight to see. It is hoped by the officers that these 18 and more will come along to the future meetings; we have a lot of good ideas to put into being which will benefit one and all and we intend to have a lot of fun also.

Quite a lot of the lads are young and have not receivers; if any Amateurs who read this page have any old communication receivers that have broken down and are lying around in the shack looking sorry for themselves, how about donating them to the S.w.l. Group; we would be very grateful for them. These chaps are very keen, but without receivers, they can't get really enthusiastic. Also, any junk you don't want, we could use it—thanks very much.

Future visits and lectures by this Group are to date a visit to George Palmers, and another talk from BERS-195, Eric.

NEW SOUTH WALES

Gerry Albeck sent along some of the news from VK2 S.w.l. Group and comment on the following. L3022 is the official scribe for the VK2 Group and Gerry is helping a little (good for you, OM). He says the last two meetings were held with very poor attendance. Come on now VK2, with all those listeners' numbers you should have at least 60 at each meeting. You don't want other States putting you to shame do you?

Rod de Balfour paid them a visit at the last meeting. How are you Rod? How's studies? Gerry ran a contest, but due to lack of space only half the rules were printed, but he had one log from L3060, fair enough, but he's hoping for more log entries in coming contests. This will be on general short wave, so get those logs in you chaps. My word Gerry does a lot of s.w.b./c. listening and has done well.

Thanks for our birthday congratulations Gerry, and he tells me that the VK2 Group are now 2 yrs. 5 months. old and have a membership of 100; if that's so, I would say 100 should be present at the meetings.

SOUTH AUSTRALIA

From L5031, Colin Hutchesson, the VK5 news. The boys down at the mount were very busy re the R.D. Contest setting up their gear. L5031 says he's sorry for not sending in a log for the "A.R." Contest as his receiver was sick; oh well, better luck next time Colin. He says band conditions were shocking on 20 and 15 mx. L5031 has been in contact with Bob Simounds the lone s.w.l. of Iron Knob and reports that he is still an active listener and seems to have a very good set-up; using an R1155 receiver on 80, 40 and 20 mx and a Geloso front-end converter on 15 and 10 and by this time he has probably erected the W5 all-band antennae. Colin says there is not much new from down this way, things are pretty quiet at the present. I am sorry to report no news this month from VK6 or VK7. This is very unusual. VK7 what about some news from the Apple Isle group?

CORRESPONDENCE

Firstly, I welcome new members to the VK3 Group—P. Devitt, G. Huckerby and S. Logvegmenko. Incidentally, you other State Secretaries can forward names of new members for inclusion in the S.w.l. Notes of "A.R." Have received mail from L3042 (BERS195), L3065, L3072, L3074, L3069, L5031, L2811 and L2211. From L3042 (BERS195), Eric states that he is very QRL, what with no shift-work and acting QSL Manager, he's flat out each evening and even at week-ends. He doesn't have a minute free. (I shouldn't think so. Eric, what with following the Magpies, etc.) Incidentally, Eric's address in the latest Call Book is wrong. It should read 340 Gillies Street, Thornbury, N.17, Vic. In the R.D. Contest, Eric put in 20 hrs. and claims 245 stations for 891 pts. He hopes all of us did equally as well, or if not better. His total loggings now are 231,773. His outward reports total for 1960 are 1,004, his inward cards for 1960 total 576, 34 zones, 100 countries. His most recent received QSLs: FG7FX, ZL4JF, both firsts, KR6IQ, OX-3DL (Zone 40), VQ2CZ, ZB1FA, ZC4AK, and ZC3AE. He says re his next appearance at an s.w.l. meeting, maybe he will make it before the end of the year, but it's no certainty.

Arising from Eric's own experience both as an s.w.l. and DXer, also Acting Federal QSL officer, he draws the attention to all VK S.w.l's. who send out cards via the bureau. To make sure you write in the call sign of the addressee in the top left hand corner of the reverse side of the card. It sure helps the poor sorting guy.

L3068, Don Grantley. Don had a hectic R.D. week-end, nothing went right. He couldn't get the 3HB or 3UW places; no antennae at home, anyhow he slung up 135 ft. East and West 20 ft. high and logged about 1,015 pts. What, were you loafing, Don? And he made that old AR7 receiver work even on 10 mx. Yes, Don, 15 was open, as well as 10. He did not hear a VK9, Mac and I did for a couple of minutes but that was all. Don says whoever wins the R.D. will have to score about 1,400 pts. He reckons he's going to knock 11,000 pts. in the VK/ZL Contest like he did in 1958.

By the way, he's moved into his new QTH in Albury and reckons it's f.b. By Sunday night he had the shack organised and the AR7 working; has not as yet got up a big antennae, only a short one 15 ft. high, 40 ft. long. Says he's the only s.w.l. with a frig. in his shack. Says the bands have been very good the last few days. He listened for 10 minutes and heard the lot.

L3060, K. Walshe. A new member to the s.w.l. ranks. He doesn't possess a receiver and he believes it possible to buy an old AR7 or AR8 at a very low price. Well I don't know old man, best you look in the "Age" newspaper of a Sat. and you may find something suitable. Can anybody help him? We of the Group are always on the look-out for receivers, as there are quite a few of the boys without them. If I hear of any I will certainly let you know.

He's had a lend of a receiver and has logged quite a few stations. Thanks, Kevin, hope to see you at the meetings soon.

L3011, Gerry Albeck. He says the broadcast band is his field and his score at the moment is: s.w. 158 countries heard, 8 QSL cards, plus 6 letters received. B.c. band, 12 countries heard, 1 QSL, Hawaii. The best DX was from the U.S. and the best DX he did log, was on L/Wave from Radio Tashkent in Russia on 184 Kc 1629 mx with 500 AW. His total logging on the b.c. band is at the moment over 60 stations from 12 countries, not including Australia, which, incidentally, he has logged 118. His receiver is a German 14 valve a.m./f.m.

L2211, Charles Abernethy. He's only a new member and started his log book in April, all ready he has heard 95 Amateur countries, and confirmation of five. On the s.w.b.c. heard 26 and 11 confirmed. Not bad for a beginner he is using a Hallicrafters SX28. He put a log in the R.D. Contest and scored 733—crikey, he beat me. He says in passing that it took the VK2 Group three months, plus a very strong letter from him re their organising, etc., for them to allocate him a number.

Charles thinks they should have a page of do's and don'ts, plus general pointers for the new s.w.l.; Chas. had to find out these things by reading "A.R." and writing to various persons. He received a card from ZL1AG who also sent him a copy of the Call Book. Chas. comments on the fact that it is a pleasure to know that some of the Amateurs are very helpful. You could have a point there, Chas'! He began to try and get a card from each State of VK land, but found it hard to drag one out of them. (The reports have to be really good Chas., but keep trying.)

L3031, Col. Hutchesson. Colin would like to know how VK3 fared in the R.D. Contest and how the noise level was at Rye. Colin, it wasn't too good at all; I used the noise limiter, but not so good. It distorts the speech quite a bit; it will have to be amended in the near future. Yes, I have seen the one published in "A.R." and it is very good.

Col. has his 7-tube receiver going well on 80 and 40, but has struck trouble on 20 and 15; the signals pour in, then suddenly a hissing sound cuts in, swamping the weak signal. He hopes to rectify this before the VK/ZL Contest, but doesn't know what to do about it, as yet.

Four s.w.l's. are using the two 6AC7s preamplifier. It's very popular in the Mount and they say it lifts signals up to the 3S units. Col. has been busy winding coils for the 7-tube receiver; he wound the 80, 40, 20 and 10 mx coils and when trying to locate 10 mx on what he thought would give him 10 mx, he was most amazed to hear a ZL calling CQ 15. (Colin, it could have been the ZL's fault; he may have forgotten he was on 10 mx.) I've heard that quite often, check your coils again.

Two 40 ft. poles have been erected by him and the antenna in use is a 7 Mc. dipole and does, as he quotes, "an excellent job on 20 and 15."

L3074, Mac Hilliard. Mac said he may go to Alice Springs about the end of the year and if he does, will take his 6 mx converter and have a go at the Ross Hull Contest, as a portable VK8 s.w.l. This idea is in the making at the moment, according to Mac. Mac heard

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SIDEBAND

Bud Pounsett, VK2AQJ
22 Seiffert Centre,
Queanbeyan, N.S.W.

VK0

From Western Australia comes a report on Sideband activity in the wild flower State. Our reporter is Vic Kitney, VK6VK, who has been a sideBander of several years' exeprience. Here is what he writes

'Since 1956, s.s.b. activities in this State have increased at no slow pace on a percentage basis with regard to Amateur operation. At present some nine stations are using this mode. The most recent of these is Graeme VK6GR

"I recently had the pleasure of looking over the fine 3291 at VK6CS, indeed a very compact unit. This would be the most up-to-date s.s.b. transmitter in the State. Another very compact unit, still under construction, is the W2EWL Exciter being built by Ray VK6ML. Looking forward to hearing this one on the air. Also it appears that VK6BE may be the first in the State to use a high frequency xtal filter rig—still under construction. Another well known station is VK6NF, who is also in the process of re-building

"There has been some activity on d.s.b., with VK6GU doing the most work in this field. Another station that is firing up some gear for d.s.b. is VK6FX

"V.h.f. has been invaded with lack of carrier by VK6ZBJ, who has a d.s.b. rig working on 80 Mc., and only contacted eight or so of the city V.h.f Group. The problem is to encourage the other fellow to learn how to drive his receiver, s.s.b.-wise.

'Listening around, 80 mx has shown a steady amount of s.s.b. and d.s.b. working most nights. At my location, VK1QU has a most consistent signal in this State. VK6GR is most active on 80. VK6KJ and VK6VK are heard some evenings. Sunday mornings, 40 mx was "singing with sideband": 6CS, 6MK, 6RU, 6GR, 6AV and 6VK, also 6KJ.

"20 mx continues to show some changes with various brief openings to all parts of the world. 73, VK6VK."

NEW SIDEBAND STATIONS

I am very pleased to extend a welcome to Stan VK1ASB and Mac VK3RV.

From Canberra, 1ASB has a xtal filter rig using low frequency xtals and hetrodyning straight to 7136 Kc. xtal controlled. The circuit uses a 7360 tube as a balanced modulator and another as a balanced mixer. The carrier suppression is exceedingly good and this tube does everything that R.C.A. claims. A 6146 in AB1 delivers the signal to the antenna. Ask Stan about his new shack—it is just as old as his sideband rig. Melbourne has yet another fine s.b. signal and this time from 3RV. Mac should have his 807 linear in operation by this time. The design is of the phasing type and uses 12AT7s in the balanced modulator at 9 Mc. V.f.o. control is obtained with the oscillator section of a Command transmitter tripling to 16 Mc. for 7 Mc. operation. The frequency stability is very good indeed. When I contacted Mac he was running a 6CL6 Class A in the final with a whole 2 watts in the antenna. The signal was clear and very readable. Mac has paid attention to good design and constructional techniques and his signal certainly shows that this principle really pays off.

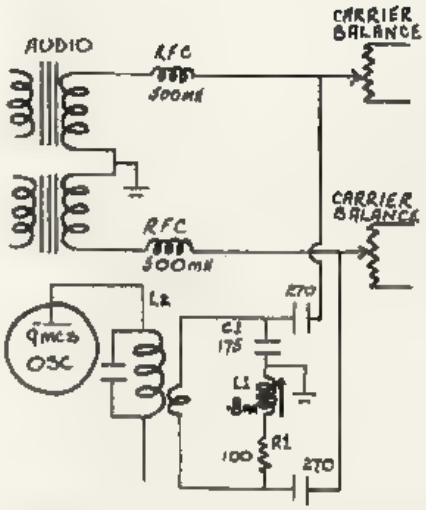
CR9AH

In a recent conversation with an old friend, Johnny CR9AH, of Macau, I found why Johnny has been absent from 20 metres. He had the misfortune to have his beam in the path of a typhoon which left the director in the form of a U and the reflector looking like an 8. He now has it repaired and can again be worked with the greatest of ease. That three element beam really works. John's rig is a xtal filter job with a pair of 813s in the final. A 75A4 takes care of reception.

BETTER R.F PHASE-SHIFT

Several of our VK sidebanders have gone over to the r.f. phase-shift network which appeared in November 1959 "CQ" magazine. They all report that this phase-shifter is easier to adjust and "stays put". It can be readily included in your present rig and I strongly recommend it for your new one. W2EWL designs can be modified in very little time.

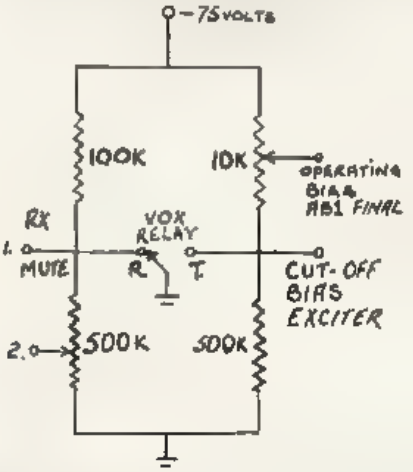
The improved phase-shift network was the work of Lester Earnshaw, ZL1AAX. For 9 Mc., the link on L2 is wound at the "cold" end of the coil and consists of 5 turns close-wound. L1 is 9 turns wound on a ¼ inch powdered iron slug. Wind the coil on a ¼ inch bolt first. The closer the iron core is to the coil, the greater will be the inductance variation. R1 is 100 ohms, 3 watts carbon (three 300 ohm 1w. resistors in parallel). C1 is 175 pF. silver-mica capacitor.



ZL1AAX PHASE SHIFT

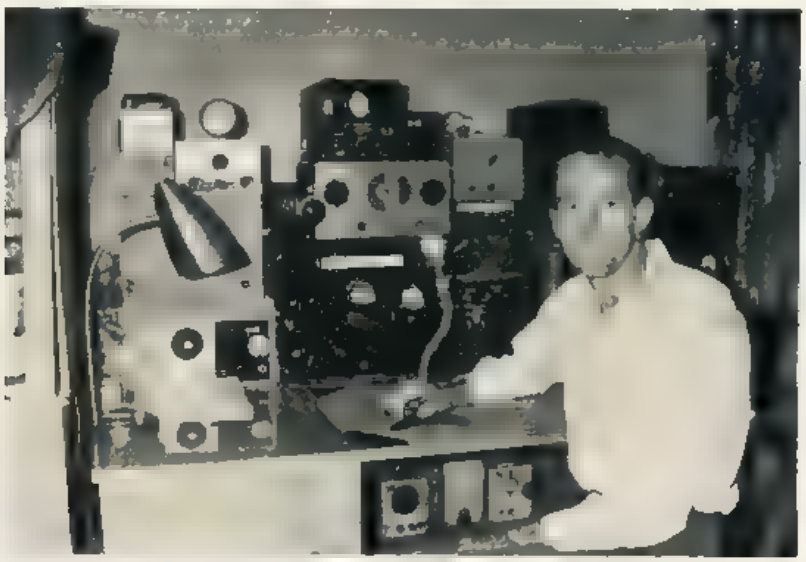
T.R. CONTROL

After the VOX relay, what then? This has presented us with some problems in the past, but I hope that this simple circuit will solve yours. About three years ago, YU1AD gave me this circuit over the air and it has been in service at VK2AQJ ever since. It uses only one set of relay contacts, in my case, the squelch relay from an SCR522 receiver.



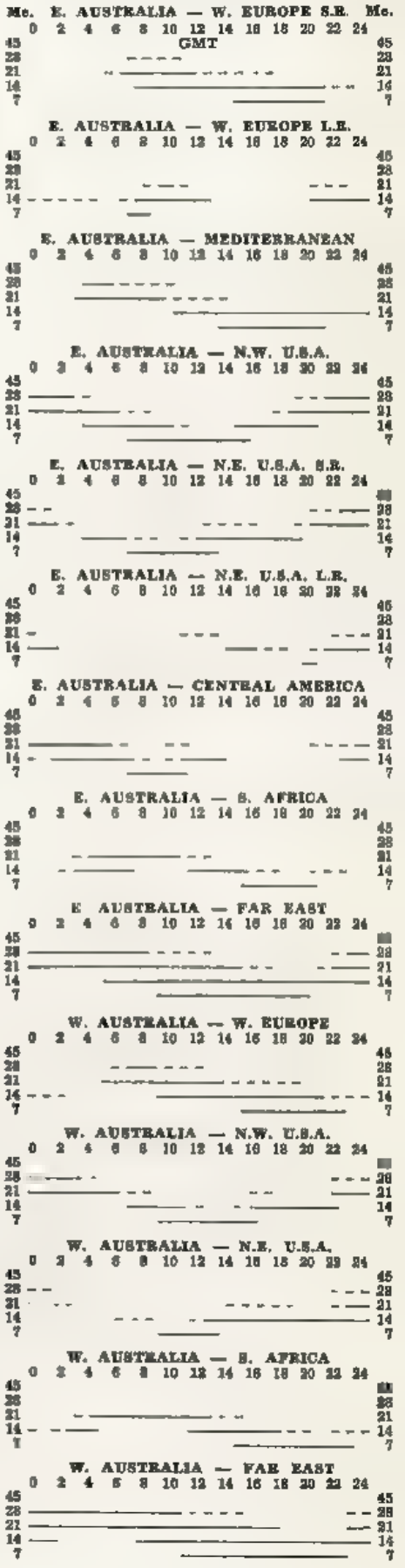
You have two choices for receiver muting, either from point 1 or 2. Point 2 will give you some control on your receiver sensitivity and allow you to monitor your own signal while transmitting, but only if you are listening on that frequency. If you consider this unnecessary, you may use a 500K resistor in place of the potentiometer. If you use a zero bias final you may also use a 10K fixed resistor instead of the variable one. To mute the receiver, I have found that connecting the suppressor grids of the r.f. stage(s) and the control grid resistor of the first audio stage, suitably bypassed to point 1 or 2, very effective. Applying bias to the a.v.c. line has undesired

(Continued on Page 34)



One of our ardent Sidebanders is Keith VK2BK, of Bondi. Here he is with the equipment that puts out that big loud signal. The transmitter is located above Keith's left shoulder and is the old favourite W2EWL design. A remote v.f.o. is responsible for the excellent stability while an SX38 and much modified CR100 takes care of receiving. Various test and monitoring equipment completes this neat living-room layout.

PREDICTION CHART, OCT. '60



D X

John C. Pinnell, VK2ZR
15 Summit Avenue,
Earlwood, N.S.W.
Phone: UW 4348.

Band conditions this month have been very changeable, some periods poor and others good. At times it needed more careful listening and skill in calling to get the elusive ones. However, there is still plenty of DX-peditions and other stations operating in remote parts to keep the DX chaser fully occupied and to test his skill.

NEWS AND NOTES

VP5YG, British Guiana, is active most days between 0630 and 1030z. He is to be found on 14 Mc. c.w.

Rundy W3ZA is planning a trip to French Somaliland from December 8-12. The call will be FL8ZA on all bands, c.w. and s.s.b.

Those who missed their card from VR3V should contact Don at his home address at G3MKG. All cards received have been answered via the Bureaux, but somehow a few have gone astray. Try again.

Eric ST2AR is now in London on leave, but expects to be back in the Sudan early in November.

Those who worked HC8CC recently may be interested to know that K4KYB does not handle his QSLs. K4KYB says he has received many cards intended for HC8CC, but knows nil of the apparent bootlegger. (W3EX)

VS9AHM, who was the QSL Manager for the Aden District, is now in England. Ray VS9ARF is now the official QSL Bureau Manager.

Andre FB8CD has now gone back to France. You can contact him at F2LI.

CR8AC and CR8XG have been worked from Goa. CR8AC is mostly on phone 21 Mc.; and CR8XG on 14 Mc. c.w.

Socorro Island, XE4, DX-pedition will take place during the last week-end of January 1961. It is understood that VE7ZM will be joining the party.

TF2WFF is active over the week-ends from 1100z on Friday. He is on 14 and 21 Mc. c.w. and s.s.b. QSL via his home station K4APM or direct to TF2WFF, 667 A.C.W. Squadron, Box 174, A.P.O. 81, New York, N.Y.

VS9ADA was a pirate and therefore no cards forthcoming. This was checked personally with the Aden license authorities by Rundy W3ZA. (MP4BDA)

MP4DAA is now in England and may be reached at his home station G2SB.

The following constitutes five new and separate country listings and each to become acceptable for DXCC credit as of Nov. 1, 1960:

Marcus Island—Confirmations dated Nov. 15, 1945 or later;
Mali Federation—Confirmations dated June 20, 1960, or later;
Mauritania—Confirmations dated June 20, 1960, or later;
Ruanda-Urundi—Confirmations dated June 20, 1960, or later,
Somalia Republic—Confirmation dated July 1, 1960, or later,
Caymen Islands—Effective immediately, the Caymen Islands listings to and counts as in its pre-June 1958 status.

The five following countries are deleted from the listings:—

British Somaliland,
Italian Somaliland,
Karela-Finnish Republic, as of June 30, '60;
Tangier, as of June 30, 1960;
Wrangel Island, effective immediately. (From A.R.R.L. Bulletin-758)

Can we please once and for all clear up the VS9O/MP4M situation? The situation is as follows: The person in charge of radio license in the Arabian Gulf is Her Brittanic Majesties Political Resident in the Persian Gulf (to give him his full title). His jurisdiction covers the Independent Sheikdom of Bahrain, Qatar and the Trucial States and the Sultanate of Muscat and Oman (which includes Masira Island and an area to the east of the Aden Protectorate called Hadraumaut, which was formerly part of Aden). Amateur licenses for all of the area are issued from the British Political Residency, P.O. Box 3, Bahrain, by a Mr. Grath, on behalf of the H.B.M's. Political Resident. The aforementioned Mr. Grath checks with the British Political Agent in each territory before issuing a license for that territory. The authorities in Aden have no powers; radio licensing or otherwise in these areas. The correct call for the entire Sultanate of Muscat and Oman is MP4M. The stations who signed VS9O and ZB2A/VS9 operated without permission and were deported by the R.A.F. by request of the Sultan.

The stations signing VS9OA, OC and OM are also unlicensed and operate from the R.A.F. base only with the permission of the R.A.F. commander who has no license issuing power. Despite frequent requests, the VS9O stations have not applied to the authorities for permits, possibly because they do not hold sufficient qualifications to obtain a proper license. All the above information can be checked by writing to the proper authorities at the Box No. given above. The latest license holder is Rundy W3ZA, OD5CT, who has been issued the call signs MP4BDD, 4MAG, 4TAI and 4QAQ, for operation in the Gulf during the fall this year. (Bryan A. Bisley, G4OFL)

I wish to thank the West Gulf DX Club in Odessa, Texas, for much of the news in the above notes.

ZD8AM is active on 14 Mc. and expects to be on Lough Island for some time. QSLs will be slow as next mail is in March 1961. QTH for mail, C/o. G.P.O. Capetown, via Tristan de Cunha. (VK3QL)

PY7LJ, Fernando de Noronha, is active on 21 Mc. c.w. round 2000-2100z, sometimes heard on 21050 Mc. (VK2QL)

W8OLJ reports the ship "Hope" will be heading for Indonesia late in September. They hope to get a license to operate from PK-land.

K4IGR has now joined the Yasme III. as additional crew and operator. Danny has his bride aboard the yacht. KV4AA is no longer QSL Manager for the Yasme voyage, but will complete the HK0AA confirmations. It is understood that W8EWS is the new QSL manager.

YA2BC is active from Afghanistan on 21 Mc. c.w. His address is P.O. Box 136, Kabul Afghanistan.

Tom Christian, VR6TC, should be on the air any time now as he has a new tx which was presented to him by Hams from all over America. VR6AC, also of Pitcairn Island, should be back home sometime this month after a visit to the U.S.A.

Jan Mayen, Kyell, LA3SG/P, is back in Norway, but this rare spot will have LA1NG/P to carry on the good work on both c.w. and [redacted].

ZS6IF has not yet completely settled his plan for his trip to Bechuanaland, but ZS6IF/9 should be on the air during the first or second week of November.

Fernando CT3AV is the first and only Madeira Island station on s.s.b. All gear is home-made and runs about 60 watts.

Korea: HM9 calls were reported to be phonies, but it now appears that these calls are being issued to Korean nationals. HM9A was scheduled to start operating on August 13 from Cheju Island, off the coast of Korea. It is not a new DXCC country.

The W4BPD DX-pedition frequencies are as follows: c.w.—28020, 21020, 14020, 7020; s.s.b.—28420, 21220, 14120, s.s.b.—28620, 21420 or 21220, 14349 or 14120 Kc. (VK2QL)

Some 14 Mc. c.w. sigs coming through between 0500 and 0800z: ZL4JF, Campbell Island, FB8YY, Antarctica; ZL3VB, Chatham Island; OY1R, ZP1BE, 4X4GD, HM9A/P Korea, 1800-2100z: SM3BPY/905, FB8FI, ZC4AK, VP9G/P, ZB2AD, IS1DKL, UO5SA, FP8BO.

ACTIVITIES

Laurie VK2AME was not as active as usual. He worked KM6BI and VR3D (Xmas Island) on 7 Mc. c.w., also heard DU7SV on this band. 14 Mc. c.w., worked was VP2VA, EI8V, FI-1WZR, KL7AL, and heard ST2AR (0334z), EP5X, W2AYN/EP, UQ2AX, ZK1AK, ZK1AR.

Frank VK2QL is still on 25 watts and has worked EL4A, EA8CG, BV3HPT, JT1KAA, LX2EQ, YV5ANI, XZ2TH, HL9KT and ZC5AE on 14 Mc. c.w., plus SW0WI and FB8XX on 21 Mc. c.w. ZD1AW was heard on 14 Mc. c.w. If you should happen to hear 2QL referred to as "Frontier Frank" I will let you into the secret how it all came about. He received his Rangers Certificate from the West Gulf DX Club in Texas and is now known in that Club as "Frontier Frank".

VK2ZR worked 94 Europeans for the month which included, all on 14 Mc. c.w., F2MA, DL-1MK, DM3RBM, G3LXL, HA8CF, HB9TU, LA4ZC, OH2NK, OE3FS, OK2KFP, ON4FU, OZ3LF, PA0RL, UA1KBW, UP2KHB/P, UH8DA, UB5UW, SM5BAS, YU3ZW, SP5ZZ, ZC4AE, also UA0KKS, HM9A/P, KP4AQY, BV3HPT.

Ian L3065, VK3ZHR, has sent a list of stations heard which includes one new country, VR3KD, Christmas Island. This brings his total to 121. He has not been so active as he is working to get his 2 mx tx perking so that he will be on the air soon. 14 Mc. a.m.: 4X4AS, XE2SA, KL7FBK, G3NNT, KA8CG, VE3CE, KL7DQE, PJ3AO, VR2DP, JA6BC, KM-6BU, TG9CP, 4S7YL, VR1F, XE2FG, VR1D, VK0PM, UA0KUA, KR6AF, G2PU, G2AMG, PA0FM, HC1FG, OA4CV, VK0KJ, KA2RA, VR3KD, KA2IO, I1SM, G8PO, s.s.b. K3CYV, VS4JT, KR6CR, W6BCU, VK0JC. 21 Mc. a.m.: WA6JRD, YV1EQ, K6ATJ, VQ2IE, ZL8. 28 Mc. a.m.: W8FQQ.

Eric BERS-195, list of stations heard include: 3.5 Mc. a.m.: VK0WH; c.w.: VK0IT. 7 Mc. c.w.: G3FPQ, SP2KAE, UA6KEB, UC2BG, VK-0PM, VS9OA (2000z), SP1LH/MM. 14 Mc. a.m.: VK6WH, VR1D 2030z, c.w. CM2QN, FB8XX, GC2FZC JZ0PO KC6JB, KM6BI, PY2CK, UL-7FA, UM8KAB, UN1AE, UP2KNP, UQ2AX, UR2AT, VK0PM, VK6TF, VR3KD, VS6EM, VS9OA, XZ2BB, XZ2TH, YS1O, 9M2FO, K6DQW/M.

Hope you had a pleasant trip during the holidays, and that the wx was not too cold for camping. Eric's countries confirmed now stands at 256 with 13 more still on the hook waiting for QSLs. He has already received QSLs for 100 countries so far this year.

Frank Seeber, Victoria, found the bands have improved as from the middle of August, particularly from Europe and South America. His loggings were received on a home-brew five-tube super mainly between 1700-1800 A.E.S.T and all on 14 Mc. phone: G8PO, F9QU, G3FPQ, VE6GB, OA4DA, VR1D, HB9MX, VE-7ZM, VK6WH, VE7CE, VK0PM, PA0FM, EA-3CY, HK3LX XE1JP G3NNT, G2FBU, KL-7DDJ KL7DK, YV5AIP, G13JIM, OA4CV, HK1PT, TI2CH, FA8CF, CN8CS.

A. Wessett, LZ136, is using Rx HQ170, Tri-band Cubical Quad, plus a 50 Mc. 4-el. Yagi. He heard several Japanese and one very weak KH6 50 Mc. signals. The JAs were 1BER, 1BNE, 1BWD, 2BOD, 2BBT, 2AQ, 3AYR, 6TL. They were calling or working VK4s. Signals heard on other bands were: 28 Mc. phone, 4S7GA; 21 Mc. phone, I1CTE, KH6AHQ, OZ-4FA; 14 Mc. phone, DJ1BZ, HS1JK, KA3HM, OE3KK, PY1CJ, TG9NO, UB5FJ, VE3QF, VR1F, VS4JI, XW2AQ.

QSLs RECEIVED

2QL: FQ8HA, VU2ANI, VS6MB, CN2BK, VR3Z, FB8CJ.

2ZR: VU2ANI, CN2BK, ZB2I, plus 81, mostly Europe and Asia.

BERS-195: FG7XF, OX3DL, VQ2CZ, YV1DC, ZB1FA, ZC4AK, ZC5AE, ZL4JF.

ADDRESSES

BV3HPT—Box 11, Hsintien, Taiwan, Formosa. (2QL)
JT1KAA—Box 639, Ulan Bator, Mongolian People's Republic. (2QL), (3QL).
LX2EQ—Via DL6EQ. (3QL).
FG7XF—Marceau, Agustin, Moule, Guadeloupe. (BERS-195)
OX3DL—Ole, Pedersen, Narssarssuaq, Greenland. (BERS-195).
YV1DC—Rafael Jose Pardi, Miranda 42, Boconо-Estado Trujillo, Venezuela. (BERS-195).
ZC5AE—Sgt. D. Phillips, R.A.F. Detchr, Labuan, British North Borneo. (BERS-195).

I again wish to thank Don Chesser and his DX Magazine for assistance given in compiling these notes, also all others who wrote to me during the month. 73, John.

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z zero time—GMT.

S W L

(Continued from Page 30)

the V.O.A. Amateur programme the other Monday and says it was very good. Mention was made of the coming VK/ZL Contest; so if you chaps have nothing better to do at 7.15 a.m. E.A.S.T. on a Monday, just tune in on the 31 metre band. (Go on say it, who am I kidding?—7.15 a.m., I suppose you lads are still in the land of the nod.) Don't forget the early worm caught the bird!!

L3072, Tom Hayward. Our illustrious, hard-working Asst. Secretary (oh, yeah!) wrote me and comments, make it a rule to send a report to Radio Prague from time to time, because they really treat their listeners well. A fort-night ago they sent him a terrific first-day cover of their Olympic Winter Sports stamps and two letters he received were covered with stamps. Also they sent two postcards of the Gymnastic meeting which is held every five years. So far this year he has received a map, coloured pennant, numerous QSL cards, a bundle of books with more to follow. For every letter sent this year, one gets a ticket in their lottery, which will be drawn in January next year—he has four to date.

This is all the correspondence this month, keep it rolling in, it helps make this page for you all.

V.O.A. AMATEUR SESSION

The Amateur session from the V.O.A. can be heard here in VK-land on the following frequencies at 0715 to 0730 E.A.S.T. Monday mornings. Mind you, a lot of these frequencies won't be of use to us but herewith the complete list:—

Station	Kc/s.	Beamed To
Courier Rhodes	1358	Middle East
Munich	2060	Europe
Munich	6185	Europe
Courier Rhodes	7260	Middle East
Salonika	9520	Europe
Courier Rhodes	9530	Middle East
Tangiers	9620	Europe
Munich	9635	Middle East
Munich	11760	East Africa
WDSL (U.S.A.)	15305	Europe
WLWO (U.S.A.)	17740	West Africa
WDSL (U.S.A.)	21605	Europe
WLWO (U.S.A.)	21610	West Africa
Okinawa	[illegible]	East Asia
Manila	9700	East Asia
Manila	11800	East Asia

Programme is repeated again on most of the frequencies at 0815 on Radio Nederland Wereldomroek. Schedule of transmissions effective Sept. 4, 1960, to Australia.

Week days, 1000-1050 G.M.T., in English, on 21480 and 17775 Kc.; 1100-1250, in Dutch, on 21480 and 15425 Kc.; 2030-2050, in Dutch, on 15220 and 11730 Kc. On Sundays, 1030-1200, Happy Session, on 21605 and 17775 Kc.

THE BANDS

Only one s.w.l. has been listening on 80 mx this month. Apparently it has been good, anyhow L3042 has heard VK0IT and 0WH on c.w. of course. 40 mx; for one I haven't been down there, but L3042 has and he has logged the following: VK0PM, SP1LH/MM, SP2KAE, UC2BG, VS6OA, UA6KEB, G3FPQ, SL8AY/MM, W6WQN/MM, EA7HE, UC2PC, UA3LI and SM-2AQB—all c.w. That's all for 40 mx and apparently it's been OK on 20 mx.

L3042, Phone. As I said last month Eric, cut out these phone loggings—do you know he's added two more this month. VK0RH (that's the second time), VR1D and VK0WH, now his c.w. calls heard JZ0PO, VK8TF (Darwin), VK0PN, KC6JB, PY2CK, UR2AT, GC-2FZC, UQ2AX, UH8KBA, VR3KD, UC2BG, UP-2KNP, K5DQW, XZ2BB, KM6BI, LX1AC, ZC-5AE, UL7CD, VR1E.

L3077, Frosty. He's been doing well since he collected his HRO; has heard 22 countries to date, and the following are some of the calls he's heard on 20 mx using an end-fed 68 ft. long wire: VR2DC, EA3JE XE2PO, K0XK, VR1D and on s.s.b. XE1TJ, K1WEW, VE7ZN, VR2AP, DL3DW, F9HF, LA8LS, LX3EQ—not bad for a beginner. Stick to it, Frosty, and send reports to a few of them.

L3074. He's been doing well on 14 Mc. and on s.s.b. has logged KL7AIZ, W4VZU, KW6AB, KL7AF, KA2HM, KW6CL, ZL3OP, KX6BQ, XL7FBI. That's one for the G-Men!! KL7FAN, W1EEE, W4ABF, K7GLP. On a.m.: KC4FH, G3PU, DL6WD, XE2SA, VS1JB, K6CQV/KS6. They haven't left me much to report on, have they? On s.s.b.: KX6DQ, TI2HP, DJ1IM, YV-5AHE, 4X4DX, UB5FJ, UA9CM, UA1DZ, 9N1GW, VU2NR, MP4BBW, CR9AH that was a new country for me and a few VS on a.m., just a couple.

21 Mc. Well it's up to me and Mac L3074. Now let's see what Mac has heard on 21 Mc. ZS1CO, CR7CK, VS3GS, 5A1TA, ZS1B, ZS1JA, 9M2EZ, HK7AB, CR8AN, VA9KOG, CT1OU, KR2JD. Myself: Well not bad, had a good night on 4th Sept. on 21 Mc. Starting at 2105 E.A.S.T., I logged the following: FK8AU, KH6CVB, G3HFD, G3HWU, G3JAF, I1VA working UH8BN (wish I could have heard UH8, but no luck), then 4S7YL, DL7BA and 9N1MM, all those in 36 minutes. Actually 21 Mc. has been good to W.S. in afternoon and three days last week at night to Europe.

28 Mc. Mac and I again, for this band has been patchy. Gee, Mac only logged three so 28 Mc. has been rather poor. He heard JA6KZ, UA8BQ, KH6BJV, s.w.b.c.

DX LADDER

		Heard	Confirm.	Zones
L3042	Eric Trebilcock	260	265	40
L3022	Don Grantley	200	57	28
L3055	Maurie Cox	181	38	18
	Rod de Balfour	168	106	26
L3074	Mac Hilliard	173	52	23
L3065	Ian Thomas	123	16	13
VK4	C. Thorpe	114	82	32
L3015	Mike Ide	86	28	—
L5031	C. Hutcheson	86	2	2
L2185	A. Chatto	79	—	—
L3072	Tom Hayward	50	11	10
L2158		78	—	—
L2189	B. Coombe	73	2	2
L3088	Don Grantley	51	4	—
L5020	F. Aslin	40	3	2
L2211	C. Abernethy	35	5	—
L5028	Gary Smythe	26	1	1
L3077	Dave Fraser	22	—	—
L2052	T. Mills	14	2	2
L2011	G. Albeck	11	—	—
L2155	P. Irvine	5	—	—
L3008	Ian Woodman	4	1	1
L2037	R. Wood	3	3	3

Well lads, this is your lot for this month. Don't forget those letters. I am always pleased to hear from any s.w.l. in VK land. So the very best of DX. 73, Maurie.

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CORRESPONDENCE

(Continued from Page 29)

so that an Amateur from any State would not be lost in a strange State.

Whether or not there would be any charge for this additional service could be an arrangement between States or could be purely a matter of State policy.

Admittedly there might be flaws in the idea, but I feel that fundamentally the basic idea has a lot of merit.

Your comments and further suggestions would be appreciated.

—S. E. Molen, VK2SG.

DX'ERS! TAKE NOTE

[The following is an extract from a letter to the Secretary of the VK3 V.h.f. Group.—Ed.]

. . Some time ago I built up a rather simple rig for 288 Mc., hoping to play around there for a while. The gear worked, but only just, and I had anticipated doing something more, but other interests, etc., crowded in and in the end it was dismantled.

Since then an overseas trip has "loomed up" and on 1st October I am to set off to a Radio Station (ELWA) in Monrovia, Liberia, West Africa. The station is run by the "Sudan Mission" and has four transmitters of 200, 1,000, 10,000 and 50,000 watts. (The 200w is used mainly as a Ham unit for contact with the Field Headquarters in Jos, Nigeria, and also to the New York office of the Mission.)

So naturally the last month or two has become hectic, what with innoculations, passport, buying and packing equipment, etc. Hence VK3ZEV is not likely to be heard!

. After I am on the field for a while we may be able to get "on the air" on the Ham rig (EL2F is the Ham call sign out there). A Ham license apparently is not needed they say! but anyway the fact of having a limited ticket may satisfy the authorities. Another Australian friend out there mentioned that it's only lack of spare time that has hindered him from putting out a CQ in this direction.

Rex Vinicombe, VK3ZEV.

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MOON-BOUNCE

On July 17, 1960, members of the Eimac Radio Club beamed their 1296 Mc. transmissions at the moon. The bounced-back signal was heard in Medfield, Mass., by W1FZJ and his wife, W1HOY. After several hours of W6HB transmissions west-to-east, the path was reversed. W1FZJ started transmitting. He was first heard at W6KEV where several of the Club members verified the reception.

SIDEBAND

(Continued from Page 31)

effects on the recovery time of the receiver, your receiver may take 30 seconds or so before you can hear the other fellow. This defeats the purpose of VOX.

DO NOT use this circuit to supply operating bias to a Class AB2 or B final because, due to the grid current drawn, the bias voltage will be most unstable.

V.H.F. S.B.

In an attempt to discover who was first in Australia with v.h.f. sideband, I have found that the honour goes to Canberra Amateur, Eddie Penikis, VK1VP. Ed first transmitted on 2 mx on 25th September, 1957, working cross-band with VK1AIL, who was transmitting on 40 mx. Not long after this, Les VK3ZCN appeared on 50 Mc. d.s.b., the date being 31st December, 1957. Reg. VK3SF came on 50 Mc. s.s.b. making the first s.s.b. appearance on v.h.f. for Victoria. The date of this achievement was 31st May, 1958. During 1958, Jock VK3ZDG produced a phasing rig hetrodyning to 50 Mc. in a parametric diode mixer and worked VK3ZAT nearby. This was done with the antenna connected to the diode mixer! He then used the r.f. stage (VR65A) of an old converter and worked VK3AHL, some miles away.

Things got moving in Victoria in late 1959. 30th August, 1959, VK3SF and VK3ZDG made the first two-way 50 Mc. s.s.b. contact in VK. 10th September, 1959, VK3SF worked VK3AHL, two-way s.s.b. on 50 Mc., thereby collecting the prize (an 807) that Lance had offered for the first s.s.b. 50 Mc. station to contact him. 31st October, 1959, VK3ZEW (at Alexandria) worked many of the Melbourne stations using 50 Mc. d.s.b. 3rd November, 1959, VK3AHL got a ZL linear going using a CV415 with a 6V6GT clamp tube and found it to be much more effective than his 50 Mc. a.m. transmitter. Both finals were running at about 20w. input.

December, 1959, VK3ZDG on s.s.b. worked VK4ZAX on d.s.b., making the first v.h.f. s.b. interstate contact. VK3AHL/s.s.b. worked VK4ZAX on December 1959. During December 1959 and January 1960, VK3AHL worked VK2, VK4, VK5 and VK6 with s.s.b. and found one notable feature of this operation was the reduction of fading with a great improvement in readability. 9th January, 1960, was an important date when VK3AHL worked ZL2DS on 50 Mc. two-way s.s.b.

18th April, 1960, was another "first" day for VK3AHL when he worked JA9IL (a.m.), making Lance the first VK3 50 Mc. s.s.b. station to work into JA-land. Earlier in the year VK4ZAX worked JA1DLN for the first VK/JA two-way 50 Mc. s.s.b. contact. VK4ZAX has now worked all JA districts with his 50 Mc. s.s.b. rig. More than can be said for some of us h.f. s.b. operators!

July 1960 found VK3ZAT, of Druin in Gippsland, on 50 Mc. s.s.b. working into Melbourne. There is not very much information on 2 mx from VK3, VK3ZDG in Melbourne and, at Ballarat, VK3ZBS and VK3ZEJ are known to be on. In Sydney, Barry VK2AAB is on 2 mx s.s.b.

Do you agree with these claims of who was first with s.b. v.h.f? See separate article in this issue. These claims will be entered as records in the "A.R." list pending receipt of counter claims by other Amateurs.—Ed.] If you have any other contributions for our sideband page, I will be glad to receive them. Photographs of your rig or yourself will be especially welcome. Contrasty, glossy prints are to be preferred.

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VICTORIAN DIVISION W.I.A. STATE CONVENTION

The W.I.A. Victorian Division's Annual State Convention will be held on Saturday and Sunday, 5th and 6th November, at Maldon.

The Convention Dinner and Meeting will be held on Saturday evening, during which time the ladies will be entertained by films.

Sunday will include a visit to a gold mine, 2 mx fox hunt, 3.5 Mc. fx hunt and all-band scramble. There will be a picnic lunch, during which an award will be made to the best mobile.

Book accommodation early with Col. Gibson, VK3FO, High Street, Maldon. See next month's issue for final details of times and venues, also listen to the broadcast.

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VIC. DIVISION W.I.A. DINNER

The Annual Dinner of the Victorian Division will be held at Scotts Hotel on Friday, 25th November, 1960.

NOTES

FEDERAL QSL BUREAU

Further to the par in Sept. "A.R." seeking information on QSL arrangements for certain VK0 Calls, add these additionals CH, CX, IN, JC, NL, and NQ.

For family reasons, Joe Collister (VK9HC) had to return to W.A. from Cocos Island soon after commencing Ham activities. Joe has sent cards to those stations contacted and requests QSLs for VK9HC to be sent to him care Cable Station, Mosman Park, W.A., or via the VK6 Bureau.

Recent overseas changes in QSL Bureau addresses include—KH6 John Oka, P.O. Box 101, Aiea, Oahu, Hawaii, W/K2: P.O. Box 666, Hillside, N.J., U.S.A., CR7: Box 1234, Beira, Mozambique, VS1: M.A.R.T.S., Box 777, Singapore.

On the occasion of the 25 years existence of the association Bremen in the D.A.R.C., a "WXBR" Diploma has been established. VK licensed Amateurs can qualify for the Diploma by contacting three Amateurs in Bremen, using any recognised band, either c.w. or phone. Contacts to be made since January 1, 1956. Enclose 10 I.R.C. with application, to Adolf Weiss DJ4TT), WXBR Manager, Rechtenfether Strabe, 28, Bremen, Germany.

—Eric Trebilcock (BERS-185), Acting Manger.

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FEDERAL AWARDS

W.I.A. OFFICIAL LIST OF COUNTRIES FOR DXCC PURPOSES

Vide September '60 "A.R.," Mauritania and Mali Federation, formerly parts of Fr. West Africa, were given separate listings as from 20/8/60. The remaining four States of Fr. West Africa (FF8) and the four States which comprised Fr. Equatorial Africa (FQ8) have since become independent and will be listed separately from the relevant dates as under:

Formerly Fr. West Africa, now:—
- Dahomey Republic—1/8/60.
- Niger Republic—3/8/60.
- Voltaic Republic—5/8/60.
- Ivory Coast Republic—7/8/60.

Formerly Fr. Equatorial Africa, now:—
- Chad Republic—11/8/60.
- Central African Republic—13/8/60.
- Congo Republic—15/8/60.
- Gabon Republic—17/8/60.

NOTE.—Congo Rep. referred to above is distinct from 9Q5—formerly Belgian Congo.

French West Africa and French Equatorial Africa are now deleted from the Countries List. DXCC credits can still be claimed for these two listings on confirmations for contacts made prior to the independence dates of the areas concerned.

COUNTRIES LIST FOR VK-ZL CONTEST

Re the VK-ZL DX Contest, 1960, the rules provide for the A.R.R.L.'s Countries List to be used for scoring. For the purposes of this Contest the W.I.A. List may be considered identical to the aforementioned with the exception of Canton Island credits—A.R.R.L. allows both KB6 and VR1.

—A. Kissick, VK3KB, Awards Manager.

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NEW SOUTH WALES

Activity within the Division has maintained a high level over the last two months. So much so in fact, that your correspondent was caught "behind the date line" last month. And now to a resume of Divisional activities.

The month of July will be remembered by historians as the beginning of a new era in the Division. The reason—the monthly meeting was held at the Divisional Headquarters located at 14 Atchison Street, Crow's Nest.

The meeting, under the chairmanship of the President, Bill 2YB, was attended by some 100 odd members and visitors. The "At Home" atmosphere of the meeting was emphasised by lectures and informal social activity with a minimum of business. The most important item on the business agenda concerned the development of the property. Members were enthusiastic for the Council to proceed with the development of the building and a unanimous vote authorised the Council to spend £4,000 on extensions to the building to provide a meeting hall, disposals storage, kitchen and toilet facilities.

The lectures for the evening were delivered by Leon 2AOJ on "Oscillators," and Leo 2AC on "Oscillator Stability in Receivers."

During August several new appointments were made, particularly in respect to Disposals. Alec 2ABU and Harry 2AJZ were re-appointed to the Disposals Committee, bringing the strength of this important sub-committee to five. Other members of the Committee are Keith 2ABK, Norm 2ALJ and Barney Smyth.

The August meeting was held at Science House with some fifty odd members attending. The lecture for the evening, entitled "V.h.f. and Microwave Equipment and Techniques," was delivered by Mr. Harrant of the P.M.G's. Department to an interested, but somewhat baffled audience.

The business portion of the meeting was highlighted by an interim report on the architectural plans for the Atchison Street building. The initial estimate of cost was reported by President Bill to be inadequate and after discussion, the meeting authorised the Council to spend a larger amount than previously voted.

At a subsequent Council meeting more detailed plans were sighted by members of Council and at the time of writing these notes, the plans are being further discussed with the architect by President Bill and Phil 2ER.

See you again next issue.

HUNTER BRANCH

Barry Goodman, VK2ZAG, was the lecturer for the month of August and gave an interesting talk, mostly concerning resistors and capacitors with a bit of u.h.f. gen thrown in. Exploded samples were distributed for examination. Don't know in what condition Barry arrived back in Sydney, as someone let it out that it was his birthday the following day.

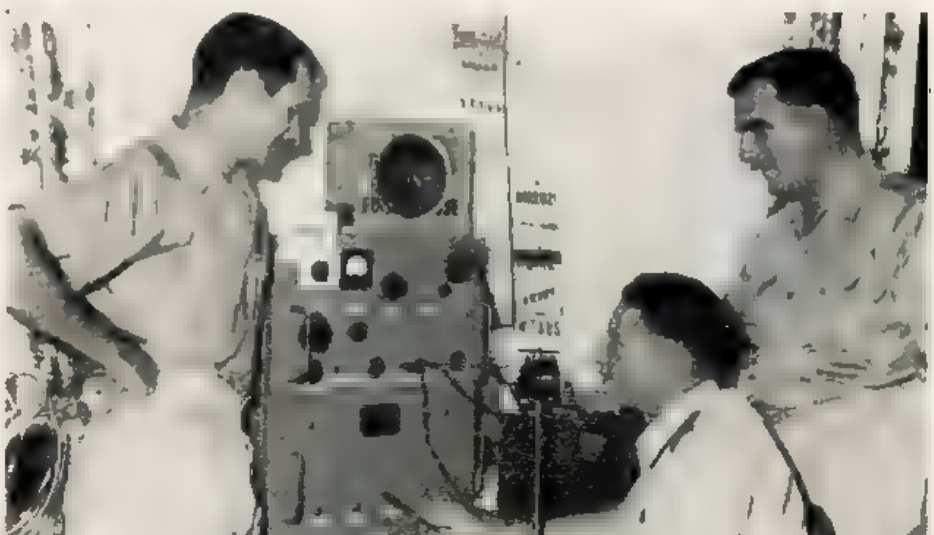
Those fortunate to be present were VKs 2AKX, 2ZL, 2AYL, 2RJ, 2ZDF, 2ZCU, 2ZNW, 2FX, 2ZJR, 2CN, 2XT, 2CS, 2SF and 2AQR. Associates in attendance were Sutherland, McLachlan, Davis, Bailey, Finch, Stebbs, Finlayson, Gray, Pearce, Temple and Webster. Quite a good roll-up considering the bitterly cold weather. My records show that President Lionel was there—we did hear his voice coming from a great heap of rags but no one saw his profile. However it appears that the local newspaper cartoonist was there, and saw him.

Keith 2AKX put on a tape he had of the A.B.C. news item concerning a school hook-up in which he and Geoff 2VU took part. Others outside the Hunter district who also took part were VKs 2IN, 2AXH, 2DE and 2ATQ, which meant that the following schools took part: Booragul, Singleton, Long Jetty, Terriga., Gundagai and Newtown. At the meeting it was resolved that the fine job done by Keith be placed on record.

At the time of writing, Varley 2SF is on holidays and has been worked on his 5-watter, north of Newcastle. Don't know how these husbands are able to get away by themselves. Hope he doesn't go near Tamworth as there is an X-essive terror there who cuts power lines by flying a kite. What were the two arms of the law doing at Merv 2MW the other day? Must be a duffer around there. Congrats. to the members who took part in the Army exercises, believe it was quite a success.

The R.D. Contest went off with a bang but isn't it a pity that those who have social skeds couldn't refrain from mucking things up on one week-end a year. Heard one joker declare they had better not hold it and then went on to talk for ten minutes without once taking a deep breath. No doubt you heard a couple of minutes before contest time, one chappie say that he had never heard the band so quite. What an anti-climax he experienced. One wonders how long the powers that be are going to allow a couple of Amateurs who carry on ad nausium on Sunday mornings. They are old enough in years to realise that Amateur Radio is at a cross-roads and a lot of bellicose drivel could do a lot of harm.

Les 2RJ, despite many warnings from those who know, has been and done it and for a time at least a good man has been lost to the Amateurs—still they always come back, anyway, congratulations Les. Harold 2AHA, who is quite a stranger these days, has been seen erecting a t.v. antenna. Sputnick is now in orbit in a new Rover—the Water Board must be paying its way. Stuart 2ZDF nearly finished re-building, but is still causing t.v.i. even with cold valves. Bill 2XT, when not being mine host at the social monthly gatherings, is too



Fl./Lt. Keith Avery, of Brisbane Qld. (left), watches with Cpl. Ray Fulford, of Greensborough, Vic. (right), as Flying Officer Ron Johnson, of Bondi, N.S.W., works his radio set. All three men at R.A.A.F. Butterworth are Radio Hams.

busy making money for another holiday. Must be going to Macquarie Island this time as he has been everywhere else. Harry 2AFA now going strong and practically recovered from his indisposition. Rumour has it that another Harry, 2AFX, is giving away t.v.-selling and "B" class broadcasting and going into a chip joint. A certain famous disc-jockey has already compounded a slogan "Harry's chips very big on flavour."

Pleased to hear that Jack Hamilton is back with Ron 2ASJ, even though his voice was still woggy. Next time you catch the golden staph, hold on to it for a while, Jack, as I believe the G-boys are onto a sure cure. Ask him to tell you the story of the BCL and Terry 2TQ and his s.s.b.

Last month the transmissions of 2AWX were carried out under better conditions with the assistance of 2AYL and 2SF. It is very hard to get into Secretary Gordon's shack these days what with literature and correspondence in connection with the Blackalls Do. As usual Gordon is doing a good piece of hard work—don't know how Ada puts up with it.

At present, Bill 2ZL is not worth two bob on the air, being almost at the point of no return trying to find out why a certain piece of test equipment that he paid £14 to be repaired won't work properly. Did you hear that a certain Lady Amateur listened to a foreign interloping station for a while before she discovered that it wasn't VK2ZL calling CQ? Stan 2AYL, operating 2AWX portable the other night, was after call-backs on 144, but didn't hear how he got on. Ron 2ASJ, now a victim of t.v.i., is no longer on the 2AWX call-back, so don't look for him after 1800 hours, hope it can be cleared up, Ron.

Well chaps you will have practically a fortnight to get over the October festivities before the October meeting which as usual will be held at the University of N.S.W., Tighes Hill, on the 14th, and with the weather containing the spring feeling there should be no excuse for not being at the Bill Hall's hall on the 26th. Come along and have a natter and a game of billiards—no entrance fee.

CENTRAL COAST ZONE

The Central Coast Net on 3635 Kc. at 8.30 p.m. on Monday nights continues as usual, sometimes with as many as 10 stations joining in. Geoff 2AII is now heard with a 122 set. It is definitely not true that he is operating from the smallest room in the house, in fact he is active from the kitchen and is building himself a shack before commencing on the gear. 2FJ is active on most bands and when not so, is building a 5 inch c.r.o. and a tape deck amplifier. 2ALA has now worked dozens of DX stations on his comical quad. This monster is designed for 20 mx and is about 42 ft. high, being mounted on a telegraph pole. The turning mechanism at present consists of a set of footpads.

Alec 2AAG is active on 80 mx phone using a 122 set from Avoca, also as 2AAK from Kulnura. These locations are 35 miles apart. The latter is his mountain retreat and here batteries are used. Alec is getting used to the controls of his 17 knob receiver. Your scribe has been promised a twiddle on his next visit to Avoca Beach. Ken 2AFH also recently licensed is using an ATR2B from Peat's Ridge with good results on 80 mx. 2AXH is complaining of poor signals on 10 and 15 mx; he still works ZLs on 80. Wally is building a 56 meg. tcx using an 829B, having fun in taming this bottle. (How about an article for "A.R."?—Ed.) A twin beam oscilloscope is being planned. 2IN is active on 40 mx from The Entrance very pleased to see him at the Club meetings. Trevor 2TM is building some simple gear for 56 megs. He still uses screen modulation on the 6146 on 80 and 40 mx. A larger power supply is being built. 2PI is also planning some 56 meg. equipment.

2RU 2AVJ, 2AMU and 2MV not active due to various reasons. (Amateurs are permitted 50 Mc.—Ed.) 2ASA is heard on Mondays using 122 set from Wyong on 80 mx.

The Gosford Radio Club now has 10 licensed members who have graduated in the three years since its formation. The latest ones are Frank Jarvis and Les Lackey who are waiting for their call signs.

2AI is still heard on 80 and 40 mx on suppressed carrier. The writer, 2ON, is very pleased with the 813 Class AB linear for sideband and when neutralised is extremely well-behaved. This is now preceded by two 6AG7 linears, the first in Class A and second in g.g. Lookout for 2AFY on Thursday, 13th October, operating from the Gosford High School Science Exhibition. 80 and 40 mx operation is planned.

ST JOSEPH'S TECH. SCHOOL RADIO CLUB

Since the arrival of club license, 2ATQ, on 10th July the boys had about 70 QSOs, averaging two per school day. Ten Interstate stations were worked in R.D. Contest and we have had seven DX contacts, chiefly W and ZL stations.

First entry in the log has a detailed description of a certain "premier fishing resort" in the remarks column. Hope the youngsters do not believe everything they're told on the air!

Chief operators are Mike, John and Tony; the first two handle c.w. well, and are collecting quite a batch of QSLs. Thanks to all those chaps who sent us their card direct. Fifty cards have been sent out from the club station, and only two of these went to s.w.l's.—any reports will be acknowledged.

Operating hours are still about 1.0 and 4.0 p.m. on most week days, so give the boys a call. Don't hesitate if it happens to be 20 mx—VK calls are as welcome as DX.

The club tx is a new Geloso 104 to 807 buffer to 6146 final. Bob 2IN supplied many parts for this compact multiband rig, including crystal mike and meters. Receiving was a problem until 2ZLM came to our rescue with a Philips No. 4. Now we are working on another rx and are able to lend the spare one to young members for a week at a time. The same system is followed with spare audio oscillators for c.w. practice.

The rig is situated alongside the blackboard in school, and the class have had several interesting talks followed by question sessions. Wal 2AXH, Col 2ASP and Hugo 2WH were very instructive on various topics.

Recent visitors were Sid 2SG (mobile) and Allan 2RX (mobile). A 2 mx mobile also called in, and my apologies are offered because I can't now remember the call sign.

So 73, and c.u.agn. sn., de 2ATQ.

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VICTORIA

SOUTH WESTERN ZONE

Advice has come from VK3 Division that, following the Zone's request for permission to use the 160 mx band for W.I.C.E.N. work, this band may be used subject to the proviso "for emergency use and practice only". There is no time limit or restriction on the stations who may use it and the zone members are charged with the responsibility of policing this proviso mentioned above in our area. This permission does not prohibit any emergency work in the other bands. It is not often we get a bit more than we ask for these days!

Last month comment was invited about complete operators. I think our President fills the bill nicely. Kevin needs no introduction as 3AKR/M is well enough known, being a home-brew rig in an imported factory-built vehicle. Now, however, Kevin has just finished the home-brew vehicle and the fitting of the rig is now just a question of time (and space). The vehicle is a QRP one but input as yet unknown.

Many zone stations put nice sigs up to VK4 on 80 mx in the evenings and that on the loaded whip, too! The band seems to be rather deserted up there, but 40 mx on the other hand much more populated and not so noisy. The mid-morning s.s.b. net was fine copy anywhere, but VK3 phone stations were not generally audible till late afternoon when some nice QSOs were made.

George 3AOP has fired up again on 80 mx and here's hoping that familiar call stays with us again now that business worries have eased a little. Remember that new chariot at 3AGD's QTH? A wedge-tail eagle bent the windscreen the other day and John is still talking his insurance company over. Seems that the policy doesn't cover airborne operations! John has taken up arc-welding now, but this has nothing to do with the aforementioned incident. He just likes to "be prepared". Have you thought of what to do when Tom starts to mend something when you are in QSO? John, who is a District Commissioner of Scouts, has been appointed by them to co-ordinate efforts in the Jamboree-on-the-Air of which mention is made elsewhere.

Another O.T. to reappear is 3DD whose 7 mx sig. on Moonbi Lookout was f.b. However my sig. must have been some other place but Hamilton. The municipal elections brought Doug 3KJ back for his fourth term as Mayor of Colac. Nice work Doug., and here's hoping it won't be so arduous as to leave no time for a CQ occasionally. Chris 3AXU is still very busy now that the big rig has QRO. Chris' eagle eye noted the latest slug the fates have dealt us in the form of the new sales tax on tubes. Formerly all tubes bore an excise of 2/9 each. Now this has been replaced by a 25 per cent. sales tax which will make the lower power transmitting tubes quite a bit more expensive. Exceptions are picture tubes and the high power tubes which we don't use. What about a song, chaps?

The R.D. Contest brought some rare ones on the band. Brian 3XN made a nice little tally in a short time without a CQ. Bill 3XE worked very hard for his 118 contacts. Seems that Bill can hear them and others can't for each contact was followed by a score of stations wanting to work the other bloke. One outstanding sig. in the Contest was Tony 3WB. Welcome, Tony, and please didn't you hear me call you from Pialba on c.w. on the whip in the middle of the QRM?

Bob 3IC has now moved to Werribee and should be about again soon. We're missing you on the hook-up, Bob. You're still in the zone you know. Kerry 3AXT has an exam. coming up soon and we wish him best of luck with it. Perhaps after then Kerry you could tell us some more about that antenna of yours that works so nicely on 20 mx. Was it a triangular vee beam or delta shaped folded dipole or how can one describe it? Talking of exams., Lindsay Moffatt has been successful with the A.O.L.C.P. and is now aiming at passing the morse test next month. While at Warrnambool we find Eric 3ANQ using 15 mx and 6 mx to rake in the JAs and occasionally comes up to 40 mx. Peter 3FX has also made his debut on 21 Mc. by tripling something or other; must have been the p.a.; and is succumbing to the DX bug. Gordon 3AGE makes a late appearance on 80 mx now and then with the ATR2B from the bedroom.

Things have been rather quiet at this QTH after the mobile operation. The new 20 mx converter has been completed and I spent a couple of futile hours persuading it to produce a signal before realising the band was completely dead. Later it came to life and produced a new country, how you can be trapped! Did anyone else hear that T3 FSK sig. on about 3505 Kc. on the 8th about 2000 hrs.? He was calling "ZSC?" and signed himself ROP32. Or the telephone bloke calling a number in Adelaide earlier in the month?

Had a report from Wally 3UT on one of my 80 mx mobile contacts from VK4 one evening. Readable 5 on his vertical antenna and nil on the dipole. Any explanations? Wally's harmonic, Keith, is doing some f.b. listening and has heard all but ten or so of the broadcast stations in the continent. Fair effort indeed considering the shared channels. Tim 3TW has the s.s.b. working nicely on 80 mx now using an A.R.S. generator to a 813 ZL linear. The object is 15 mx and G-land during the low of the solar cycle. A newcomer to the bands, but an old timer in electronics, is 2AAK/AAG. Alec's QTH is Avalon Beach except when on the farm at Kulnura and is one of a very well known Warrnambool family at which place he was born. John 3ARJ has forsaken the shack for the lure of the rod and line. Can't quite imagine why, for both pursuits could be followed here without leaving the shack. Dale 3AZT and Elizabeth 3ZJT have come to rest in Melbourne. Dale was using a 6AQ5 modulating a 6AQ5 with 2.4 watts input on 80 mx and putting in a nice sig., too. Many thanks to those who passed on the gen, but a further request though; what gen from Ballarat way?

CONTEST CALENDAR

Oct.	1-2	VK-ZL, phone.
"	8-9	" c.w.
"	22-23	Boy Scouts Jamboree
"	28-30	"CQ" WW DX, phone
Nov.	25-27	" " " c.w.
Dec.	3-4	R.S.G.B., 21/28 phon.

MOORABBIN AND DISTRICT RADIO CLUB

This last month has been marked by an increase in membership. Our activities, both social and technical, are varied and seem to fit in with the other activities of our members which makes for interest and smooth running. The Crazy Whist nights have been well patronised as are all our other social events. Not quite so the last tx hunt, but weather plays a big part in such an event, and it was a cold night. The October one should be better though, for we have promise of more starters. It will be held on the evening of 12th October.

One activity which may have been overlooked by Amateurs other than members, perhaps because of lack of publicity by us, is the 'Honorary Membership Certificate" issued by the Club. I have just posted the latest certificate to Allan 3AKZ, who has complied with the rules and won himself the honour. A few notes re this may not now be out of place. Quoting from the rules:

Object: The object of this award is to promote interest in, and friendship with, VK3 contacts. There are many active transmitting members of the Club. Ask all VK3 contacts: "Are you a member of the Moorabbin and District Radio Club?"

Rules: 1. To become eligible for the award, Australian mainland stations including VK7 must contact by radio fourteen member stations currently financial at the date of contact.

2. Overseas stations including VK0 and VK9 call signs must contact by radio five member stations currently financial at the date of contact.

3. The Club station VK3APC may be regarded as a financial member station for this purpose.

4. On completion of the required number of contacts, the applicant must forward to the Certificate Officer by any suitable means a list of the call signs of members contacted, together with the times and dates of contact and his own correct postal address.

5. After verifying with the logs of the named member stations, a Certificate of Honorary Membership will be awarded and forwarded by post.

6. If the required number of member stations is contacted for a second or subsequent time, a further award may be issued. This will take the form of an emblem for attachment to the Certificate. Stations named for such an award must not include those already named for a previous award.

7. Honorary membership will allow all the privileges of full membership of the Club, less the counting of contacts with Honorary Members for the award of this Certificate and less the power to vote.

8. This award is not available to financial members of the Club. Station operators who have been financial members must have resigned their membership in writing prior to the date of any contacts named for the award of this certificate to themselves.

9. Rules and conditions of this award may be amended by a notice of motion one month prior to being put to the vote at a regular meeting of the Club. After being passed by a majority of members present, the amendments will come into force.

10. The address for certificate correspondence is: Moorabbin and District Radio Club, 17 College Grove, Black, Rock, Vic.

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QUEENSLAND

BRISBANE AND DISTRICT

Well, at the time of writing this screed, our Secretary, Stan 4SA, has been gone two weeks on his grand tour of the north. He sent a long letter from Townsville, and though it should be in my pal, 4RW's writings, you will get a kick out of this anecdote. Ted 4EW was putting up a tower and Ted, feeling more at home in a speed boat than on a tower, enlisted the support of Bob 4MF. Bob, a lot younger than Ted, was taking some risks and Ted was in great trepidation lest he fall. The climax came when Bob executed a rather risky manoeuvre and Ted exclaimed, "Bob, for goodness sake be careful," and grabbed Bobbie around the waist. Bob, a bit ticklish, said coyly, "Ted, control yourself, they don't know about us yet!" and gently removed himself from Ted's amorous embrace. That story is in Stan's own style of telling "good uns" and I hope you get as much of a kick out of it as I did.

I recently had a long discussion with Mr Farr, of Warburton-Franki and he told me that his firm will soon be able to supply any Heathkit you want to buy. He will be sending Heathkit circulars to all the W.I.A. members in Queensland so that you can decide what you want to buy.

In the September "A.R." there was an item on page 11 about the theft of gear from two members in Victoria. One was our Federal President, Max Hull, and I hope that you will be careful if someone, you don't know, tries to sell you any gear.

One of our members, Ian 4MO, is going for a really wonderful journey. He is going to New York by way of London by Boeing 707 to do a Research Scholarship at the University of New York. He will visit R.S.G.B. headquarters in London and A.R.R.L. headquarters in West Hartford.

For many years our audit has been done, very efficiently, by Don Hurley and everyone just took it for granted. Well, recently Stan brought Don's work up at a Council meeting and suggested that he be made a Life Member of our Division for the wonderful job he has done for us. He was approached and he said he would be delighted to have membership of the Division. Believe me, gentlemen, we should thank our lucky stars that we have such a willing helper, strangely enough, with six years on Council behind me, I know the work Don has done and I, personally, welcome him to membership.

Well, with the extra job of Acting Secretary on top of President's position, I don't seem to have any spare time these days and, though I had four years as Secretary, it's really a job and a half. So I'll QRT now and hope to have a lot more news next month.

TOWNSVILLE

Congratulations goes to Claude 4UX as he has now six of his class of eight with the limited 2 call sign. He has another class going but this time the aspirants are shooting higher, going for the broadcast and commercial tickets. Well Claude, hope they all make it. Thanks also goes to George Peterson, who allows the class to use his workshop with all the latest test gear including t.v. equipment. George is in the radio retail and interested in TV, DX and listens to the 50 Mc boys when conditions are good.

Claude and his shadows intend to bring Amateur Radio to the notice of everyone in their district, besides getting good publicity in the local daily paper. They are putting in

radio exhibits in the Education Week display and Back to Airdale Week, so their classes will expand. The boys also journey to Townsville each month to attend the local club meeting, 150 miles round trip (keen, eh?).

Ere this appears in print, Graham 4BX will have sat for his B.I. exam. and all the gang wish you all the best with it.

Donnie 4ZDM now on 50 Mc. and has cracked the DX to Hawaii and Japan, but now hopes to work other VKs and puts in a lot of time listening. Basil 4ZW came in for a visit and pitched his tent on the spare allotment and visited most of the locals. Took Nick 4WT to Charters Towers to see Vern 4LK and also took Bob 4RW to Ayr to visit all the Z boys there. Bob 4MF has been on a walk-about, heard his portable down south causing grave QRM to Herb 4KM, signals were not always the best here due to changing conditions.

Stan 4SA, the Secretary of the Queensland Division of the W.I.A., arrived here on the Monday. After spending a day or so in Mackay earbashing the boys, said to have Shanghied John 4FH on to the local W.I.C.E.N. group. He arrived at Claude 4UK's at Ayr on the Sunday afternoon and stayed the night. Jess, Claude's XYL, had put in the day catching fish for Stan's breakfast. "How lucky can you be?" Stan took the opportunity to meet all the locals and put forth strongly the W.I.A. views to the newcomers to the band.

He will stay in Townsville a fortnight and contact all interested bodies of the town and explain the hobby of Amateur Radio to all and sundry, besides giving a talk at the local radio club and will also explain our part in W.I.C.E.N.

On his visit to Cairns he will again catch up with Bob 4RW, who is on a three-months' holiday, and meet all the locals here before journeying to Atherton on the Tablelands to meet the gang there. On his travels, he will hear complaints and kudos of the W.I.A. and in his usual charming manner will carefully shoulder all their troubles and rectify same on his return home. Jess, his XYL, I hope enjoys her holiday, but take my tip and see he shows you all the beauty spots. You have waited a long time to see our beautiful North.

Hear that Chas. 4RQ has promised Frank 4ZM he will supply news of DX heard each week before the news session on 4WI.

Bert 4BP, Darwin bound after tripping around North West Queensland, appears to have a good trip only marred by a few slight accidents with the trailer. The portable rig did a grand job when I heard it from Mt. Isa.

4SM, an old timer, looked real well when I visited him the other day and likes to talk about the olden days. On a recent visit to Mornman with Basil 4ZW, called on Harry 4OH and found him in a new job, no more early mornings on the milk run, has set up in the radio business and doing well. On the way home stopped at Palm Beach to admire Ted 4MH's beach house—aptly named "Seaque."

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SOUTH AUSTRALIA

The monthly general meeting of the Division with the most on the ball, to wit, the VK5 Division, was held in the clubrooms to a capacity audience, all of whom spent an enjoyable evening and a rewarding one from a technical angle as well. The night took the form of a display of members' home-constructed apparatus and the display excelled itself, both as to the number of entries and to the superb quality of the workmanship. Al 5ZCR was the winner of the receiver section, Barry 5ZBZ won the transmitter section, Cyril 5DY won the section for associated Amateur gear, with a beam indicator using transistors (the same piece of gear that the Editor and I went down on our bended knees last month in the magazine, for an article on); John 5JG won the instrument section with a 5 inch c.r.o., and last but not least, Gil 5GX won an award with an all-band transistorised transceiver, which fairly made the mouth water.

Excellent apparatus was also displayed by many others, Bob 5ZFG had a 288 Mc. xtal controlled transmitter, Neil 5ZAW had a micromatch, 5CN had a 288 transceiver, 5ZGP had a 288 Mc. transceiver complete with a G4ZU aerial to match, and Mr. Edmeades had an unusual gimmick which was a speaker cum headphone cum speaker cumheadphonecumspeaker, well anyway, it was a good gimmick, you will agree. Carl 5SS displayed his modulation checker and Luke 5LL brought along his newly acquired Heathkit transmitter and v.f.o. for all to see and envy.

All and all, it was an excellent night and must have been well rewarding to the programme committee for persisting with this type of display after the somewhat poor results achieved last time. Once again courage of their convictions paid dividends.

Very little general business was transacted, and apart from the somewhat delayed ratification of the Special Easter Convention minutes, the meeting was almost business free. The hurricane lamps were blown out at the witching hour of 11 p.m. and with the farewells of the members lingering in the ears of the Chairman, Lloyd 5OK, he whipped up his horse and buggy and clipped-clopped sleepidly on his way to the backblocks of Lockleys. I have had no confirmation of the fact, but it is assumed that he made it in one piece, but roll up to the next meeting and find out for yourself.

It is pleasing to report that the Division had good publicity this month, both in the press and radio. The Chairman and President did an interview on Monitor for the R.D. Contest. We got a letter in the paper on the Project Peace and the Amateur Station which will be aboard (see "CQ" for June), we secured an excellent write-up on one of our members (Brad. Booth) who is leaving the State Police Force and journeying to Canada to join the Mounties, mainly because of his association with Amateur Radio, and Gordon 5XU blew in and out of the papers daily in connection with the aluminised balloon and Moonwatch, so much so, that two separate people, not connected with radio, were heard to remark that apparently Amateur Radio was getting quite strong these days. Naturally this all reflects great credit upon the Divisional publicity officer, although when I took on the job I was quite prepared to work hard!! Rootity tootity toot. If I don't blow my own trumpet, who will? [A do-it-yourself job—full of wind.—Ed.]

George 5GG is apparently still happy with 7 Mc. judging by his enthusiastic approach to all contacts. When caught here was calling and calling a VK3 mobile, and finally got him, to the mutual satisfaction of both sides. Frank 5MZ is getting into these notes with the monotonous regularity worthy of better things, but only because he seems to be in trouble each month. First it is his arm, then his burns, and now he has cut his hand. I would take a ticket in Tatts. myself. Carl 5SS is taking a little time away from the birds to engage in a new version of lend-lease. Gordon 5XU now and again does a little theoretical investigation for Carl, so Carl is now doing a little metal work for Gordon. The perfect set-up, if I might be permitted to say so. I am not permitted, OK, I hope that your birds lay square eggs Carl, and all say OOHH!

I always endeavour to keep any reference to the v.h.f's. out of these notes, in deference to the v.h.f. scribe, ho! hum! but my typewriter recoiled in horror at my last listening to the v.h.f. portion of the W.I.A. session, when Al 3ZCR said that the v.h.f. boys should bring along some equipment to the coming monthly meeting, and show the low frequency boys some things that they have probably never seen before!! How smug can one get? I have heard of the Z complex before, but this is the first time that I have met up with it. Al, my boy, could you have been poking mud at all the grandpappies. Fie upon you, and a couple of fiddle-de-dees.

Col 5XY heard in his usual Sunday hook-up with John 5DJ at Kingston, "The land of the crayfish." John's words not mine, and also mysterious references to "Splatter," apparently a publication that Col was interested in, to say nothing of frogs' legs for experiments and Q multipliers. The ground covered by these two in a contact is amazing. Graeme 5XV used a 250 watt amplifier in the University procession and worked so hard and long at it prior to the big day that he spent the big day in bed, nigh unto exhaustion. I understand that he was testing it all around the neighbourhood to see if the shop and house windows would stand up to it, and had no casualties. If he cares to write to me I can give him an asbestos copy of the various remarks from the neighbourhood.

Les 5LC on 7 Mc. in contact with John 5JM gave the game away because of QRM from an electric drill nearby. John was only using 8 watts and was also in trouble with 33,000 power mains. Les said that he would have to locate the user of the drill and tell him to use a filter, and from my personal observation of Les, the filter is already installed. Arguing the point with him would be equivalent to looking down a lion's throat and asking the lion to say 99, if you get what I mean. Have not seen or heard anything of Doc 5MD or Cec 5BZ since their return from trip through VK2 and the capital city. Did not see any reference in Parliament to their visit, nor to any disturbances, so apparently Cec behaved himself!

Rex 5DO heard on 7 Mc. discussing that dreadful topic t.v. with one of the wise men from the East. When the topic graduated to color t.v., I got off at the next stop with the feeling that my bread and butter was in danger. Please boys, consider my feelings a little. Bill 5CS was another one on 7 Mc. talking about t.v., although in this case he was only saying that his mother had recently secured a set and what a boon it would be to her. Football also came into the discussion. Rob 2RG (ex-5RG) is at the moment back in VK5 for a couple of months or so, doing a quick t.v. course to keep in touch with modern practice, and also renewing old friendships. Has consented to give a talk at the next meeting on VK2 land.

Tubby 5NO heard on the W.I.A. call-back describing a DX station heard as of "doubtful legitimacy," and with the chuckle that followed this description, I am still trying to work out as to whether he meant the operator or the station!! Comps 5EF also heard on the W.I.A. call-back with the remark that he was not sure if he would use Single Sideband in the R.D. Contest. This I take as a gesture of defeat and a confession as to the inadequacy of s.s. when the pressure is on. I never thought that I would be lucky enough to hear such a remark, and also a proof that I can read his signal. I knew if I waited long enough he would convict himself out of his own mouth.

Wally 5DF is now well set and active from Leigh Creek, although so far no coal has been dumped at my back door. Heard him remark that he is surprised at the absence of wind up there after all the wind he was used to at Port Lincoln. Give it time Wally, give it time. Les, Mahomet to you, 5AX recently found a new station in the hamlet of Gawler, Brian 5ZDF, and was proudly boasting of the increase in the ranks. I suppose it won't be long before Gawler will want to secede from the city Division and form its own Division complete with Vice-Presidents, etc., etc. I will listen to the vice part anyway.

Don 5TM heard loudly advising all and sundry to get out of the shack on such a lovely day and get into the garden. In proof of the sincerity of his remarks he was heard on the air on 7 Mc. practically all day, which is solid support for "don't do what I do, only do what I say." Arch 5XK, with a signal like the broadcasting station, was heard telling all and sundry that he had never used 100 watts in 30 years activity, and was not likely to start now. Well with that signal he was using 99 watts from Lucindale, or else was mobile outside my front door. Come clean my friend, what have you done to the rig lately? Pat 5KM was another one to come pounding in the other Sunday on 7 Mc. I don't think that I have ever heard him so strong as he was, I took him for a local at first, and was quite surprised to hear him say Victor Harbour.

Although the Northern Territory is now VK8, it is still part of VK5 and it seems years since this column carried any reference to the doings of the gang up there. Now it goes without saying that if no news is received by the scribe it becomes extremely difficult to write about anything, however although I may be likened in some quarters to a shrinking violet, or should it be penny? I will stoop to any depths to get a mention about VK8. Bearing this in mind, I read in the local paper this week about a householder of Darwin who decided to take his dog for a little walk after sundown, and upon seeking the dog he found it standing fourfooted and snarling at something under the house. Peering under the house the householder was astonished to see a fair sized crocodile gazing intently back at him. Now the part of this paragraph that impressed me was the closing words. It simply said that the householder and the dog retired back into the house to consider the position!! Now if he was not a radio amateur I will eat my hat, only an amateur used to finding all sorts and conditions of gremlins in his rig or receiver would instinctively retire to consider the position. Well I warned you earlier that I would stoop to any depth to get a mention of VK8 in the notes, did I not?

The August monthly meeting of the South East gang consisted mainly of a discussion of the doings of the R.D. Contest, and from all reports received everybody was well satisfied with their efforts. I understand that there was only one non-starter, and after the roasting that he received at the meeting, he is still in sackcloth and ashes yet.

The most important and also pleasant news from the S.E. this month is that Pastor Ron Holmes has been issued with his call sign, 5VH, just too late for the R.D. Contest, but very acceptable nevertheless. Ron has his eyes on a tall tree in his neighbour's back yard and has even obtained permission to use it for a support for the antenna. Diplomacy thy

name is Ron. Stuart 5MS has one pole up but unfortunately was not able to spend much time in the Contest, but did manage to collect a representative score at that. Leo 5GJ is the aforementioned gentleman in disgrace for this month. His avocation prevented him from getting on in the Contest, but after his reception at the meeting he has decided to resign his job if it occurs again.

Claude 5CH could only spare ten minutes for the Contest but collected ten contacts, which to say the least is a pretty good average. Tom 5TW was a very pleased man on the Sunday morning, at early hours, to contact a VK0 on Macquarie Island on 7 Mc. Nice work, Tom. Erg 5KU kept Mt. Gambier on the map among the c.w. fraternity during the Contest and also used his telephony technique when the adherents of Mr. Morse were slow in coming up.

Dave 5AW is at the moment of writing on his well earned holidays and is visiting Adelaide, probably renewing acquaintance with the city slickers. He is preparing his v.h.f. gear ready for the coming summer months and now has xtal controlled rx's and tx's for the 1 and 2 mx bands and puts a good signal into Mt. Gambier on those bands. Arch 5XK, who will now always be included in this section of these notes, and after all why not, it is his right place, although I know where his right place is, but the editor won't let me say it. He fell asleep at 3.30 a.m. during the Contest, but did his share for the Division despite his unintentional snooze. Strange as it may seem, Arch has a winge up his sleeve, he is bemoaning the lack of VK5s on 80 mx, and finds the VK7s more sociable on that band.

Col 5CJ now has his 1 and 2 mx converters converting OK and is re-building the 2 mx tx. Is still keeping his average up on 40 and 80 mx plus acting as my espionage agent at the usual huge salary!! There was no sign of the usual Tantanoola visitors at the meeting but as Col says it was bitterly cold and they are excused this time. Probably out looking for that tiger, maybe.

Mystery question for this month is who was the VK5 laddie who, despite the moans and groans of his XYL, rose at 2 a.m. on the Contest morning, contacted a couple of stations, went outside to quieten the dog which was barking, locked himself out, and then had to wake the XYL to let him in???

News from the Upper Murray district tells of the misfortunes of that well known radio actor, Tom 5TL (all autographs and photos obtainable through the office of his "Charity begins at home fund"), who not only had his bestest microphone go on the blink but also jammed his middle finger, left hand, in the office safe door. No damage disclosed to the door, but the office staff have added several new words to their already extensive repertoire, or should it be repetwoire. Latest information to hand is that he will continue to live!

Harry 5KW has settled in at his new job in the city of culture, although as yet no hint of his place of abode. Expect to see you at the meetings now Harry, I need someone to help me to talk up, nobody even listens to me these days. Hughie 5BC and George 5QB noticed the other day delving into the innards of a t.v. set, the after effects of which, at the moment, must remain a dead secret, because my secret agent was told quite politely to be on his way as they could do a better job without him. Apparently his well-meant suggestions became a little onerous.

Fred 5MA has been out portable-mobile a couple of times during this month to keep his interest awake, and also to check with Tom 5TL that their 22's were moth and rust proof. Tom, of course, was the shrewd one, he stayed at home because it might rain, but at least they proved that 80 mx was more reliable than 40 mx for their tests, although their 40 mx signals were heard a long way from the Upper Murray.

Two events of some importance occurred in VK5 this month, the first was the visit of Ken 3AFJ and his charming XYL Joan. The first indication that I had of their arrival in our fair city was a telephone call at about nine o'clock at night telling me that I had thirty minutes to get out of town, and it was not until I was passing through Tailem Bend that I woke up who it was, and somewhat sheepishly returned to Adelaide. They both came out to visit the Best Broadcasting Station in VK, in fact Joan washed up my tea dishes and also made the tea for our supper. The grapevine was working by this time, and Joe 5JO had dropped in, and a pleasant evening was spent by all. Ken and XYL came to lunch at my QTH on the Friday and with my XYL carrying a heavy cold, my cold just getting better, to say nothing of my grandson half-way through the mumps, we lined up our forces against them. I am hopeful of receiving the news any day now that the entire Pincott family are prostrate with either a cold or the mumps, or better still, both! I will teach them to trifle with me!!

The second event was my receiving a somewhat threatening letter from my palsy-walsy the Editor, which I have handed to my lawyer on the chance of a libel action. He tells me that he can see nothing wrong with it and suggests that I am suffering from a persecution complex. Be that as it may, I have now received a letter from Tom Hogan, Ron Higginbotham, and now the reigning Editor, my dear, dear Mr. Cocking, and they are all along the same lines—to wit, don't talk so much, don't pad so much, in fact say what you have to say and then SHUT UP. Flattery will get them nowhere!

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TASMANIA

The R.D. Contest is again over, and we are hopeful of retaining the trophy. Congratulations to Keith 7RX on his claimed score of 971 points, the leading score for this Division. Next year we hope you top the 1,000, Keith. Myles 7MF turned in a claimed score of 783 points, with Reg 7RI 791 points. The average of the six top logs should be well up in the high 600's. The Contest was remarkable for the excellence of the 80 mx band which yielded this Division many valuable points during the Saturday night. The big job of checking the logs is now well under way, so the Southern VK7s should be conspicuous by their absence from the air during this busy time.

A decision of great importance was taken at the general meeting on 7th September. Council was directed by that meeting to undertake the raising of funds to establish our own Divisional headquarters. We hope you will see your way clear to help in this respect over the coming years. At the same meeting, Joe 7BJ delivered an excellent lecture and practical dmonstration on the conversion of the BC454 receiver, which drew our warm acclamation at its conclusion. We were also told of the appointment of VK3ZV as our representative on the Frequency Allocation Committee of Review, and we wish Arthur every success in his most arduous and important work on our behalf.

Remember the Scout Jamboree of the air, from 1000 hours on 22nd October, 1960, to 1000 hours, 24th October, 1960, E.A.S.T. It is likely that four stations will be taking part this year in the South and we hear that one station from the North and one from the north-west will also be participating.

We were sorry to learn of the serious illness of Mrs. 7RM during the past few months, thus explaining the silence of Rupe. We wish Mrs. Barker a speedy and complete return to full health. Rupe has ceased his employment with the well known concern which took him around the State, and he is now employed by a large electrical concern in connection with t.v.

Re-broadcasting of the Sunday morning Institute broadcast has now begun on the 80 and 144 Mc. bands. I had a letter from G3NGF just recently. The Rev. A. W. Sheppard, of 75 Park Road, Mansfield, Woodhouse, Notts., England, himself a Methodist Minister, is compiling a register of Methodist Amateurs throughout the world as a side-issue of his World Association of Methodist Radio Amateurs and Clubs. If you are a Methodist and would like your name included in the register, write to G3NGF at that address. If you are interested in working all Counties of England, you will have to work G6VQ, the only active Amateur in West Morland. I was lucky enough to QSO him late in August.

NORTH WESTERN ZONE

The R.D. Contest went off more or less OK, once again with a few reports of the usual types of breakdowns.

Our usual monthly meeting was held at the usual QTH in September when 18 members were in attendance. The meeting was addressed very eloquently and we hope persuasively by Mr. Jacobs, a representative of St. John Ambulance on the take over of ambulances throughout the State, the radio controlling of same and the staffing on a voluntary basis, of the controlling stations. I hope all local Amateurs will give the matter urgent consideration with a view to making the abovementioned operation a success.

Supper was served as is the normal practice and the remainder of the evening was spent in general discussions amongst members; there being no items of surplus gear to be disposed of. There should be a goodly quantity in evidence for next meeting.

We have to extend our congratulations to Ken Hancock who was successful in the recent A.O.C.P. examination and he now has his full ticket. I understand he is busily engaged completing the necessary formalities and gathering unto himself some gear.

David 7DA has gotten away to a flying start and has very successfully worked into W land with his 25 watts, using the 40 mx dipole on 20 mx. Ellis 7WA is busy putting the finishing touches to his rx to end all rx's. (How about details for "A.R."—Ed.) Sam 7SM is progressing with the new final and is still putting a healthy signal on the air with his exciter unit. Kevin 7ZAH hasn't got his 2 mx gear functioning as yet, I do believe he is displaying YL interests at the moment which naturally restricts Ham activities. Max 7MX is, I understand, showing tendancies towards negative peak clipping; best of luck Max, and we hope nothing more than the negative peaks get clipped.